

# NAVAL POSTGRADUATE SCHOOL

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## THESIS

### OVERCOMING THE ABM TREATY: PATHS TO NATIONAL MISSILE DEFENSE

by

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June 1998

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**OVERCOMING THE ABM TREATY:  
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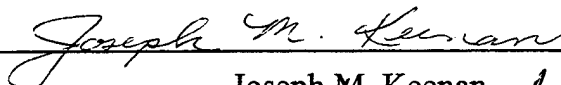
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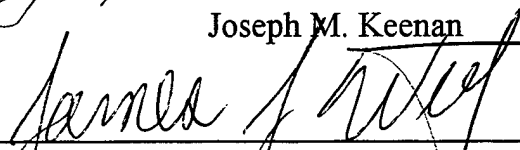
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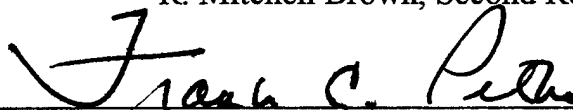
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## ABSTRACT

Some of the most heated debates taking place on Capitol Hill surround a proposed American National Missile Defense (NMD) system. The debate is not new. For twenty years, the Anti-Ballistic Missile (ABM) Treaty and its underlying acceptance of mutual assured destruction (MAD) enjoyed widespread support among U.S. leaders. Events of the early 1990s shook support for America's "no missile defense" posture to its very core. The fall of the Soviet Union, the proliferation of weapons of mass destruction (WMD) and ballistic missile technology, and the Gulf War presented new challenges to existing strategic doctrine. As a result, a renewed push for a U.S. National Missile Defense system began in earnest, and a new round of debates began over the utility of the bilateral ABM Treaty in a multilateral post-Cold War international environment.

This thesis identifies four distinct paths which the United States could follow in addressing the NMD-ABM Treaty debate. Each path is characterized by distinct factors which historically have influenced past ABM system debates. The most likely path to NMD that the United States is following, based on these driving factors, is identified. The potential implications which this prevalent NMD path may have on U.S. Navy force structure and planning is also addressed. Understanding how the current NMD debate is structured and driven enables one to discern which path to NMD deployment the United States is on. This realization can help shape future force planning considerations.



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I take great pleasure in acknowledging my thesis advisor and second reader, Jim Wirtz and Mitch Brown, for their patience, tireless efforts, and high academic standards throughout the thesis process. They challenged me to explore my topic more thoroughly, write more objectively, and argue more persuasively. They painstakingly edited numerous drafts of this thesis in great detail, enabling me to present a polished product. They set the standard for academic excellence and mentoring.



## **EXECUTIVE SUMMARY**

Some of the most heated debates taking place on Capitol Hill concern a proposed American National Missile Defense (NMD) system. The debate is not new. Ever since the continental United States became vulnerable to strategic nuclear ballistic missile attack in the late 1950s, U.S. leaders and strategic thinkers have wrestled with the question of how to deal with this threat. The Kennedy, Johnson, Nixon, and Reagan administrations explored the technical and political feasibility of a national Anti-Ballistic Missile (ABM) system through the Nike-Zeus, Nike-X, Sprint, Sentinel, Safeguard, and Strategic Defense Initiative (SDI) programs. In September 1967, U.S. Secretary of Defense Robert S. McNamara announced the Johnson administration's decision to deploy a limited ABM system that would be capable of protecting virtually the entire U.S. population against small-scale ballistic missile strikes. A scant five years later, however, the United States reversed course and signed the U.S.-Soviet ABM Treaty, which placed severe restrictions on U.S. anti-missile deployments. Since then, the United States has remained vulnerable to ballistic missile attack.

The implications of Iraq's conventional ballistic missile strikes against coalition forces and innocent civilians inside both Israel and Saudi Arabia during the 1991 Gulf War, and the subsequent discovery of Iraq's covert weapons of mass destruction (WMD) programs, served notice to America that WMD and ballistic missile proliferation were a clear and present danger to American security. The U.S. military and intelligence communities also began to realize that the disintegrating strategic command and control structure of the crumbling Soviet empire was strategically destabilizing, and contributed to the proliferation challenge. The

threat of an accidental or unauthorized nuclear strike against the United States became a real possibility. As a result, Congress, in November 1991, demanded the deployment of both theater and national ballistic missile defense (BMD) systems. For the past seven years, the debate over the deployment of a BMD system has raged back and forth without resolution. Due to the genuine nature of the rapidly developing WMD and ballistic missile threats around the globe, American leaders must settle the debate.

#### **A. PATHS TO NMD DEPLOYMENT**

Plans for NMD deployment have changed substantially with each new presidential administration. The current Clinton administration plan is "3+3." Just before President Clinton was elected in 1992, President Bush proposed a Global Protection System (GPS) in cooperation with the Russians. Seven years before President Bush's proposal, President Reagan was touting the large-scale Strategic Defense Initiative (SDI). In the decades prior to SDI, the Nixon, Johnson, and Kennedy administrations all had their own varied plans for a national ABM system. The net result has been a host of wide-ranging, short-term proposals for NMD, but no system deployment. The architecture of NMD system deployment probably will change again after President Clinton is succeeded in office. In fact, the Clinton administration's "3+3" deployment readiness program would seem to be more of a temporary political concession to appease an extremely vocal pro-NMD Republican Congress, rather than a whole-hearted commitment to NMD. It would be prudent not to put too much stock in the Clinton administration's stated NMD deployment readiness plan. Instead, the key drivers underlying the NMD debate might offer a more accurate indicator of which path the

United States is taking towards NMD deployment.

This thesis identifies four distinct paths which could unfold to address the legal limitations set against deployment of a comprehensive U.S. national ballistic missile defense system by the 1972 ABM Treaty and its 1974 Protocol: (1) ABM Treaty withdrawal; (2) a cooperative approach with the Russians, in order to amend the ABM Treaty to allow for strategic defenses; (3) a "muddle through" course of action; and (4) a gradual erosion of the Treaty by new technologies. The probable course *en route* to NMD deployment which the United States is apparently following will be identified.

## **B. FACTORS DRIVING NMD DEPLOYMENT DECISIONS**

The key factors affecting the four proposed NMD deployment paths each paint a different picture of how the United States might address the NMD-ABM Treaty challenge. The nature of the threat is *the* driving factor in the recent push for NMD. There are, however, other factors which figure into the NMD deployment decision-making process. Identifying which factors drive NMD deployment decisions, at a particular juncture in time, can help to discern which path the United States is currently on towards NMD deployment.

The current NMD-ABM Treaty debate is often confusing, with politicians putting forth a myriad of different proposals for a NMD system. There are also those politicians who would very much like to maintain the ABM Treaty regime and not deploy a NMD. Four distinct paths have been identified in this thesis to address the NMD-ABM Treaty debate. Each of the four paths has been framed by factors which have been key factors in past national ABM system debates. The objective here is to examine which factors appear to be at work

in today's NMD debate and compare them to the four paths postulated in this thesis. In doing so, it provides some insight into what path towards NMD the United States appears to be on. Insight into which path the United States is following towards NMD can have far-reaching applications in U.S. force structure and planning. This thesis also assesses some Navy-specific planning considerations.

### **C. OVERCOMING THE ABM TREATY**

Currently, NMD technology development is eroding the ABM Treaty regime. New missile defense systems are being tested which push the limits of technology into the range of the "new and exotic." There are several advanced "theater" ballistic missile defense systems, or system components, in the research and testing phase which, when deployed together, would provide the United States with a *de facto* NMD capability. Many of these proposed systems would bend, if not break, the current ground rules of the ABM Treaty regime. Procurement schedules have been laid out for many of these systems, and system deployment dates have been scheduled. The program which may transcend the ABM Treaty regime first is the Navy Theater Wide system.

## I. INTRODUCTION

Some of the most heated debates taking place on Capitol Hill surround a proposed American National Missile Defense (NMD) system. The debate is not new. Ever since the continental United States became vulnerable to strategic nuclear ballistic missile attack in the late 1950s, U.S. leaders and strategic thinkers have wrestled with the question of how to deal with this threat. The Kennedy, Johnson, Nixon, and Reagan administrations explored the technical and political feasibility of a national Anti-Ballistic Missile (ABM) system through the Nike-Zeus, Nike-X, Sprint, Sentinel, Safeguard, and Strategic Defense Initiative (SDI) programs. In September 1967, U.S. Secretary of Defense Robert S. McNamara announced the Johnson administration's decision to deploy a limited ABM system that would be capable of protecting virtually the entire U.S. population against small-scale ballistic missile strikes. A scant five years later, however, the United States reversed course and signed the U.S.-Soviet ABM Treaty, which placed severe restrictions on U.S. anti-missile deployments. Since then, the United States has remained vulnerable to ballistic missile attack.

For some twenty years, the ABM Treaty and its underlying acceptance of vulnerability to mutual assured destruction (MAD) enjoyed fairly widespread support among U.S. policy makers and members of the defense establishment. Events of the early 1990s, however, shook support for America's "no missile defense" posture to its core.<sup>1</sup> The political instability of the Soviet Union exemplified by the attempted coup by Communist hard-liners against President Mikhail Gorbachev, led the United States to contemplate the possibility of one of

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<sup>1</sup> McMahon, p. 1.



its worst nightmares: loss of centralized command and control of the Soviet nuclear arsenal and nuclear material, and the possibility of an accidental or unauthorized Soviet strategic launch against the United States. Today, the nightmare scenario of a lapse in Russian nuclear command and control has become a reality. Since the dissolution of the Soviet empire, there have been numerous confirmed incidents of attempted smuggling of strategic nuclear material out of several newly independent states of the former Soviet Union.<sup>2</sup> The well-publicized loss of Russian control over weapons-grade nuclear material puts the integrity of the Russian nuclear command and control structure in considerable doubt. Additionally, the proliferation of ballistic missile and weapon of mass destruction (WMD) technologies to many Third World nations, exacerbated by the demise of the Soviet empire, seems to signal the rise of a new multi-polar international arena in which the time-tested notions of the former U.S.-Soviet bipolar international system and MAD may no longer apply.

The implications of Iraq's conventional ballistic missile strikes against coalition forces and innocent civilians inside both Israel and Saudi Arabia during the 1991 Gulf War and the subsequent discovery of Iraq's covert WMD programs, led Congress, in November of that year, to demand the deployment of both theater and national ballistic missile defense (BMD) systems. For the past seven years, the debate over the deployment of a BMD system has raged back and forth without achieving resolution. Due to the genuine nature of the developing WMD and ballistic missile threats around the globe, American leaders must settle the debate.

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<sup>2</sup> Allison, pgs. 23-26 and Barnaby, p. 6.

## A. WHERE ARE WE NOW?

The key differences between the Republican Congress and the Clinton administration's national missile defense (NMD) plans concern: (1) the relevance of the ABM Treaty regime; (2) the readiness and effectiveness of the necessary ABM technology; and (3) the nature of the emerging ballistic missile threat. The Clinton administration was quick to embrace the content and conclusions of the U.S. Intelligence Community's (IC) National Intelligence Estimate (NIE) 95-19, *Emerging Missile Threats to North America During the Next 15 Years, November 1995*, to support its NMD position. NIE 95-19 found that: "No country, other than the major declared powers, will develop or otherwise acquire a ballistic missile in the next fifteen years that could threaten the contiguous 48 states or Canada."<sup>3</sup> The Republican proponents of NMD, however, viewed NIE 95-19 as a highly politicized estimate which suffered from serious analytical shortcomings.<sup>4</sup> Republican leaders in Congress believe that a small-scale, unauthorized, or accidental ballistic missile attack on the United States is one of our Nation's most serious security threats.

This thesis seeks to answer the following questions:

1. How might the United States move beyond the ABM Treaty limitations, which pose the single greatest obstacle to establishing a robust, comprehensive

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<sup>3</sup> Refer to NIE 95-19.

<sup>4</sup> The House Committee on National Security challenged the findings of NIE 95-19 in its August 1996 Report to the Chairman of the House National Security Committee, *Foreign Missile Threats: The Analytic Soundness of Certain National Intelligence Estimates*, as did the DCI directed Independent Panel Review of NIE 95-19 to the Senate Select Committee on Intelligence Chairman Arlen Specter (R-PA).

National Missile Defense (NMD) system?

2. Which course does the United States appear to be steering in overcoming the ABM Treaty limitations and achieving the goal of NMD deployment? Why does this particular path seem to be more likely than other possible ones?
3. What are the potential implications of the current NMD development path for future U.S. Navy force structure and planning?

The partisan NMD debate taking place inside the beltway suggests that there is a general consensus among Republicans and Democrats for some type of national ballistic missile defense system. At one end of the spectrum, leaders of the Republican-led Congress favor pushing the envelope for a comprehensive national missile defense system now, as opposed to later.<sup>5</sup> At the other end, the Democratic Clinton administration has come out in favor of a “3+3” approach, whereby BMD research and development (R&D) would progress for an initial three years, to be followed by a threat assessment. The Clinton administration’s “3+3” program has been taken up by the Ballistic Missile Defense Organization (BMDO), the successor to the Reagan-Bush administrations’ Strategic Defense Initiative Organization (SDIO), and is touted as a “Deployment Readiness Program” and a “Major Defense Acquisition Program” which is designed to develop and maintain the option to deploy a NMD

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<sup>5</sup> The revamped Republican argument is most recently contained in the National Missile Defense Act of 1997.

system if the threat warrants one.<sup>6</sup> If the perceived threat warrants NMD deployment after the initial three-year R&D period, then a system could be deployed and made operable within the following three-year period. There seems to be emerging bi-partisan Congressional support for some type of NMD deployment due to the profound security threats emerging around the globe. The discord driving the NMD debate therefore involves the wide-ranging particulars of NMD system size, scope, cost, threat urgency, and associated ABM Treaty compliance policy concerns.

This thesis will identify four distinct paths which could undermine the legal limitations set against deployment of a comprehensive U.S. national ballistic missile defense system by the 1972 ABM Treaty and its 1974 Protocol: (1) ABM Treaty withdrawal; (2) a cooperative approach with the Russians, in order to amend the ABM Treaty to allow for strategic defenses; (3) a "muddle through" course of action; and (4) a gradual erosion of the Treaty through new technologies. The probable course *en route* to NMD deployment which the United States is apparently following, either intentionally or unintentionally, will be identified. The implications of this current NMD development scenario for future U.S. Navy force structure and planning will be assessed.

## **B. POTENTIAL PATHS FOR THE FUTURE**

The basis for the four potential paths dealing with the ABM Treaty and NMD are laid out in the following section. Each scenario provides a distinct path which the United States may follow as it addresses the NMD-ABM Treaty issue. Each of the four paths is driven by

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<sup>6</sup> BMDO Fact Sheet 97-27, p.1.

a combination of key factors. The most important factor is the nature of the threat. A description of these factors, and how they influence each of the four paths, is provided in Chapters II and III.

### **1. *ABM Treaty Withdrawal***

Perhaps the most controversial of all the proposed paths for overcoming the ABM Treaty has been the one endorsed by those Republican leaders and staunch ABM Treaty critics who would very much like to see the United States exercise its legal right, as provided for under Article XV of the ABM Treaty, to withdraw unilaterally from the Treaty in the interests of American national security.<sup>7</sup> While such a move would certainly be radical, at least in the eyes of ABM Treaty supporters, it would also eschew the tough issues of international law and Treaty compliance currently impeding NMD deployment. It is, however, the most difficult and unlikely path towards achieving success in NMD deployment. Several studies have developed compelling arguments in favor of ABM Treaty withdrawal. William T. Lee, in his exhaustive study *The ABM Treaty: A Study in Elite Illusion and Delusion*, has utilized recently declassified American and Soviet intelligence reports, among other authoritative sources, to show that from the late 1950s until 1991, the Soviet Union was on a two-track approach to ABM defense. One track was to develop a complex, fixed site system designed to defend Moscow, and the second was a dual purpose SAM/ABM system designed for national defense of the Soviet homeland.<sup>8</sup> The dual purpose systems were being

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<sup>7</sup> See Appendix A for the complete text of the 1972 ABM Treaty, and Appendix B for the complete text of the 1974 Protocol.

<sup>8</sup> Lee, p. 136.

deployed more than a decade before the ABM Treaty was signed into international law and continued in violation of the Treaty right up until the fall of the Soviet Union in 1991.<sup>9</sup> Russia and some of the Soviet successor states are now in possession of these ABM systems. Lee cites at least thirteen points of fact to support his argument that a Soviet national anti-ballistic missile (NABM) deployment and modernization program existed from the early 1960s through 1991. Lee argues that the ABM Treaty was never a valid contract, and it is not currently in the U.S. national interest to perpetuate the ABM Treaty illusion.

The Heritage Foundation has also taken up the ballistic missile defense debate with profound zeal, publishing several studies on the subject in the past few years. The Heritage Foundation's 1995 *Report of the Missile Defense Study Team ("Team B")* and its 1996 update, *Defending America*, convey their most thorough arguments. The first recommendation of the Heritage study is that "Congress, and the U.S. Senate in particular, should seek ways to remove the obstacles to effective missile defenses posed by the ABM Treaty, including possible withdrawal from the Treaty as the United States is entitled to do under Article XV."<sup>10</sup> The study further recommends acceleration of sea-based, wide-area homeland defenses in favor of purely ground-based systems for NMD. The Heritage study notes that this decision would require noncompliant systems, given the restrictions of the outdated ABM Treaty.<sup>11</sup> The ABM Treaty must therefore be scrapped, according to Heritage Foundation analysts, to develop an effective NMD, since sea-based strategic missile defenses

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<sup>9</sup> Lee, p. 22.

<sup>10</sup> Heritage Foundation, *Defending America*, p. 1.

<sup>11</sup> Lee, p. 2.

are prohibited by the Treaty.

Several current and former members of Congress, statesmen, and other notable government leaders have also supported a withdrawal from the Treaty. Representative Martin Hoke (R-OH) and Senate Foreign Relations Committee Chairman Jesse Helms (R-NC) have both introduced bills calling for ABM Treaty withdrawal. Senator Jon Kyle (R-AZ), also a proponent of the sea-based NMD option, has pointed out that should the Senate reject ratification of the September 1997 ABM Treaty multi-lateralization Memorandum of Understanding between Russia, Ukraine, Kazakhstan, Belarus, and the United States; then there would be no recognized successor to the Soviet Union.<sup>12</sup> Senator Kyle sees the issue this way:

It seems a pretty straightforward proposition: No treaty partner, no treaty. And in the absence of the ABM Treaty, there would no longer be a legal basis for preventing the United States from protecting against a danger that is dramatically different from that of 1972 - a bipolar world in which the Soviet Union had a monopoly on ballistic missile threats to America and its allies.<sup>13</sup>

Additionally, both 1996 Republican Vice-Presidential candidate Jack Kemp and former U.S. Permanent Representative to the United Nations and Reagan Cabinet member Jeanne Kirkpatrick penned their sentiments in a joint letter to Senator Strom Thurmond (R-SC), Chairman of the Senate Committee on Armed Services. Kemp and Kirkpatrick wrote that "the ABM Treaty, designed for a bipolar world always had dubious value. It is now wholly outdated. The only relevance of the ABM Treaty to the contemporary world is to

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<sup>12</sup> See Appendix C for a complete text of the September 1997 Agreements.

<sup>13</sup> Kyle, "An Effective Anti-Missile Strategy," *Wall Street Journal*, p. 1/14.

hamper an effective effort to defend America.”<sup>14</sup> President Reagan’s Secretary of Defense, Caspar W. Weinberger, echoed those sentiments when he told *Forbes* magazine that, “instead of mindlessly guaranteeing the permanence of our defenselessness, we can renounce - and should have long ago - the ABM Treaty as violative of U.S. national interest.”<sup>15</sup> Even one of the key architects of the ABM Treaty, Nixon administration Secretary of State Henry A. Kissinger, in another letter to Senator Thurmond, expressed his views that “the time has clearly come for the United States to consider either amending the ABM Treaty or finding some other basis for regulating U.S.-Russian strategic relations. The ABM Treaty was born of a different era, characterized by a different set of strategic and political circumstances.”<sup>16</sup>

Clearly, powerful guns have been brought to bear against the continued adherence to the ABM Treaty regime. Though the choice for ABM Treaty withdrawal is the most radical path among several options, it cannot be dismissed as a possible scenario. It may not occur under the present administration, but under the right circumstances, with Republican control of both the Congress and the Presidency, ABM Treaty withdrawal could become a strong possibility. Therefore, this particular path must be addressed.

## 2. *Cooperation with the Russians*

In September 1991, President Bush extended a proposal to the Soviet Union for cooperation on ballistic missile defenses. The United States also announced that it would be

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<sup>14</sup> Kemp and Kirkpatrick, letter to Senator Thurmond.

<sup>15</sup> Weinberger, “How to Make Our Defense-Lessness Permanent”, *Forbes*.

<sup>16</sup> Kissinger, letter to Senator Thurmond.



eliminating all of its tactical nuclear artillery and many other tactical nuclear weapons. In October 1991, Soviet President Gorbachev announced that he too believed that cooperation on missile defenses should be discussed. Following the demise of the Soviet Union, Russian President Boris Yeltsin picked up the mantle of missile defense and made a bold proposal for a cooperative U.S.-Russian "Global Protective System" (GPS).<sup>17</sup> In the final statement of their June 1992 Summit, Bush and Yeltsin agreed that a group of experts, the Ross-Mamedov group, would discuss cooperation on early warning, cooperation and advanced technologies for defense, non-proliferation, and a legal basis for the Global Protection System (GPS). They also agreed to work together to amend existing treaties, including the ABM Treaty, in order to realize a GPS.

The key Ross-Mamedov session occurred in September 1992. At that meeting, Ronald F. Lehman II, Arms Control and Disarmament Agency director under the Bush administration, presented the American case to the Russian delegation for amending the ABM Treaty. Ambassador Robert Joseph subsequently presented this proposal in its detail at the Standing Consultative Commission (SCC). According to Robert Joseph and Keith Payne, this particular proposal outlined a series of formal amendments to the ABM Treaty which would have:

- eliminated restrictions on development and testing of ABM systems and components;
- eliminated restrictions on radars and sensors;
- eliminated restrictions on the transfer of ABM systems and technologies; and

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<sup>17</sup> Lehman, "The Offense-Defense Relationship: Past and Future."

- permitted additional ABM deployment sites as well as additional launchers and interceptors.<sup>18</sup>

The American view was that the overall circumstances of the U.S.-Russia relationship had changed dramatically since the end of the Cold War. An opportunity to forge a new relationship, entailing technological and political cooperation, had arrived. An important aspect of this relationship was the need to rethink the question of whether the two nations should begin cooperation in defending both nations' populations, rather than collaborating to maximize their vulnerability. It was made clear that missile defenses would play an important role in the two nations' future, and specific proposals were made to amend the ABM Treaty. It was proposed that each nation be permitted to deploy more than the 200 interceptors that were permitted by the original draft of the ABM Treaty.<sup>19</sup>

Given the prevailing international environment, it should indeed be easier for the United States and Russia to cooperate on the BMD issue. As Michael Krepon pointed out in *Foreign Affairs*:

Moscow now has a more flexible attitude toward the issue of ballistic missile defenses. Russia's periphery is aflame in the Caucasus, where ethnic scores are still being settled. The "backlash" states that Washington worries about most cannot reach the continental United States with missile attacks. In contrast, Russia's borders are within range of theater ballistic missiles. As a result, the Yeltsin government is showing more negotiating flexibility than protectors of the ABM Treaty in

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<sup>18</sup> Joseph and Payne, "Ballistic Missile Defense: The Need for a National Debate."

<sup>19</sup> The ABM Treaty does not ban missile defenses. In fact, it explicitly provides, as signed in 1972, for 200 interceptors, plus additional test sites. "In its original form, it had already envisioned as many as perhaps four or more places where a country might have interceptors, although only two of these were to be operational deployment sites." (Lehman, p. 5) This, of course, was later amended to one operational deployment site in the 1974 Protocol agreement.

the United States.<sup>20</sup>

Any efforts at cooperation between the United States and Russia on a GPS would likely entail some amendment to the text of the ABM Treaty, and a significant sharing of advanced technology. Since the U.S. missile defense program technologies are more advanced than Russian ABM system technologies, the burden of BMD technology "sharing" would ultimately fall upon the United States in exchange for Russian flexibility in the Treaty amendment process. The realm of technology sharing is where any cooperative effort between the United States and Russia on GPS, or any other joint missile defense architecture, is likely to stall. Is the United States prepared to share the U.S. Navy's AEGIS, or other advanced sensor and anti-missile developments, with Russia? Is the North Atlantic Treaty Organization (NATO) prepared to share future cooperative U.S.-European missile defense systems with its former adversary?<sup>21</sup>

### 3. *Muddle-through*

The time-tested practice of political compromise has been vital to the success of the American democratic experience. The tendency of the American political process to reach time-critical decisions through political compromise, however, is sometimes a liability for crucial Department of Defense (DoD) programs. Major defense acquisition projects routinely become mired in drawn-out debates, tight fiscal constraints, and pork-barrel politics. Swift

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<sup>20</sup> Krepon, p.21.

<sup>21</sup> *The London Independent* reported on May 21, 1997, "Russia and NATO to Share Missile Defenses", that NATO and Russia had reached a commitment, at least in principle, to cooperate on ballistic missile defense against any missile aimed at a Eurasian target between the Atlantic and the Urals, as delineated in the "Founding Act" agreement. Little constructive work has been accomplished though, as other issues such as NATO expansion and START II ratification have taken center stage in both Russia and NATO as of late.

decision-making required for the rapid deployment of much-needed military systems does not occur in the United States until a threatening incident takes place which then jolts the political machinery into action. Pearl Harbor, the first Soviet A-bomb test, the loss of China to Communism, Sputnik, the Gulf of Tonkin, and the Cuban Missile Crisis are all examples of incidents where American politicians were caught off-guard by rising threats, and were forced to respond posthaste. The current NMD debate may ultimately be terminated by a comparable event.

The Clinton administration's policy of "3+3," in addition to allowing the Russians to link START II ratification to ABM Treaty maintenance, seems to be a politicized decision. After the initial three-year NMD R&D period, when a crucial threat assessment and NMD deployment decision is slated to be made, the Clinton administration will be on its way out of office; leaving the NMD political hot-potato in someone else's lap. This particular "muddle-through" approach may simply be designed to perpetuate the status quo, leaving the essential elements of the ABM Treaty intact, while the Standing Consultative Commission (SCC) "refines" technological limits and definitions, as it did in September 1997 with the release of several agreements and understandings on the ABM Treaty.<sup>22</sup> The indecisive nature of recent Administration policies towards NMD is a classic example of the way "muddle-through" politics can drive a major defense acquisition program.<sup>23</sup>

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<sup>22</sup> See Appendix C for a complete text of the September 1997 SCC agreements.

<sup>23</sup> A prime example of the Clinton administration "muddle-through" is contained in Michael C. Sirak's article "In the Wake of Congressional Demands... Administration Steers Clear of Defining Current Parties to ABM Treaty," *Inside Missile Defense*. According to the article, there is still much legal wrangling taking place over successorship to the ABM Treaty, despite the Standing Consultative Commission (SCC) agreements of 26 September 1997 (contained in Appendix C). When the House and Senate were preparing to confer, in June 1997, on the European Security Act of 1997, just prior to the

In a "muddle-through" scenario, the American political process warps threat-driven requirements. NMD may very well turn out to be the next victim of this American political phenomenon. Three outcomes usually result from "muddling-through:" (1) the defense program in question is ultimately canceled after a long, partisan, and costly debate; (2) the program develops into a bi-partisan, compromised hybrid which fails to meet the threat; or (3) the threat suddenly manifests itself and damages American interests seriously enough to move the sluggish political apparatus into high gear, and the program in question is finally given the high priority it deserves. Some believe that the Clinton administration's "3+3" plan is the solution to this challenge. The Clinton administration's "3+3" deployment readiness program would seem to be more of a temporary political concession to appease an extremely vocal pro-NMD Republican Congress, rather than a whole-hearted commitment to NMD. The Clinton administration has never been in favor of ballistic missile defense. In fact, the administration has worked to restrict missile defenses through the Standing Consultative Commission (SCC), and has proclaimed the ABM Treaty to be the "cornerstone of strategic stability." A long-term "muddle-through" strategy with respect to NMD could prove to be catastrophic for the United States. As William Graham has put it, the question is not really whether we deploy NMD, but whether we do so before or after the first nuclear armed missile

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signing of the SCC agreements in September, the Clinton administration had certified under Condition Nine of the Senate's resolution for the ratification of the CFE Fink Agreement to "seek Senate consent of any multilateralization agreement to the ABM Treaty." (*Inside Missile Defense*, April 29, 1998, p.1) The Clinton administration did just the opposite by signing the SCC multilateralization agreements of September 1997. In the eyes of key Republican lawmakers, the administration has yet to *legally* define the ABM Treaty partners. This development has set the stage for a showdown between Congress and the President over the ABM Treaty later this year.

lands on American territory.<sup>24</sup>

#### 4. *Eroding the ABM Treaty*

The basis of the argument for those in favor of taking an incremental, gradual approach to ABM Treaty erosion is contained in the details of the ABM Treaty itself. The ABM Treaty is vague. The ABM Treaty prohibits national ABM systems capable of intercepting "strategic" ballistic missiles. The original ABM Treaty text, however, did not define the technical difference between strategic and tactical systems, to say nothing of "theater" ABMs.<sup>25</sup> Additionally, "gray areas" in the Treaty text and questions not fully resolved, or even addressed, by the Treaty negotiators become apparent "when guidance is sought regarding the treatment of 'exotic' and multipurpose technologies that can be developed and tested as part of systems whose missions are unrestricted by the Treaty, but are similar to an ABM mission."<sup>26</sup>

Ten years ago, Herbert Lin predicted that "next-generation air-defense (AD) and anti-tactical ballistic missile (ATBM) systems may have important capabilities against 'theater ballistic missiles (ranges between 1,000 to 5,500 kilometers). Since some missiles previously designated as 'strategic' have comparable ranges (i.e., submarine-launched ballistic missiles (SLBMs)), these new surface-to-air missile (SAM) systems may erode the Treaty regime at least in a political sense."<sup>27</sup> The rapid speed with which technology is moving could

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<sup>24</sup> Lee, p. 142 quoting William R. Graham.

<sup>25</sup> Ibid., p. 132.

<sup>26</sup> Lin, p. 12.

<sup>27</sup> Ibid, p.22.

undermine the Treaty by exploiting inexact Treaty language, assuming that Treaty limitations are not further "tightened" in future U.S.-Russian arms control discussions.<sup>28</sup> The ABM Treaty, however, does not limit NMD research.<sup>29</sup> Modern weapons, such as the Navy Area and Army PATRIOT (PAC-3) systems, have shown good prospects in recent tests for becoming become effective theater missile defense systems in their own right and will continue to become more efficient and reliable over time.

The United States has concluded that its theater ballistic missile (TBM) defense systems being "developed," as opposed to the more capable systems being "researched," are ABM Treaty compliant. TBM defenses are designed to protect deployed American forces, installations, and allies from short and intermediate range ballistic missile threats. U.S. TBM systems must be able to deploy rapidly and move with U.S. forces. Since the TMD threat is diverse with respect to range and capability, no single system can perform the entire TMD mission. This has led the BMDO to develop a "family of systems" approach to defeating the theater missile threat.<sup>30</sup> The TBM "family of systems" architecture includes: PATRIOT Advanced Capability-3 (PAC-3), Navy Area Defense, Medium Extended Air Defense System (MEADS), Theater High Altitude Area Defense System (THAAD), Navy Theater Wide Defense, Joint TMD Program Efforts, HAWK Air Defense System, and Battle Management/Command, Control, Communications, and Intelligence (BM/C3I) systems.

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<sup>28</sup> The Clinton administration has already begun to tighten the language of the ABM Treaty, as evidenced by the agreements reached by the SCC on 26 September 1997.

<sup>29</sup> McMahon, p. 254.

<sup>30</sup> BMDO TMD Programs Statement, BMDO Internet home page. Internet source: <http://www.acq.osd.mil/bmdo/bmdolink/html/tmd.html>.

Several components of these theater systems are designed to have future national missile defense applications. For example, THAAD radar development activities will provide the basis for the national missile defense ground-based radar (NMD-GBR) Radar Technology Demonstrator program. The Air Force, in coordination with the BMDO, is developing a boost-phase intercept system called the Airborne Laser (AL). Additionally, the Navy envisions a future role in an NMD "family of systems" by building on its current TBMD programs and developing its follow-on SM-2/AEGIS/Lightweight Exoatmospheric Projectile (LEAP) configuration. Detection and BM/C3I systems architecture, such as Brilliant Eyes and the Space-Based Infrared System (SBIRS) in development for TMD are also designed to benefit NMD, and are planned to be deployed soon.

U.S. ABM development is an incremental effort to field a genuinely threat-driven NMD. One must consider the substantial amount of investment already placed into the BMD program and the financial incentives that future BMD defense contracts offer. *Government Executive* magazine recently listed the Top 200 Contractors for 1997. Total defense contractor purchases to date for the Ballistic Missile Defense Program were listed at \$1,394,606,000 and growing.<sup>31</sup> The six top U.S. BMD contractors (TRW, Raytheon, Coleman Research Group, Lockheed Martin, Nichols Research, and Colsa) hold 51.3 percent of the total market share.<sup>32</sup> The possible "spin-off" industries and applications that could be developed from R&D in BMD also hold considerable financial promise for these companies. Major defense contractors which have a vested interest in the long-term survival of the BMD

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<sup>31</sup> *Government Executive* magazine Internet home page ([www.govexec.com/top200/topbal.htm](http://www.govexec.com/top200/topbal.htm)).

<sup>32</sup> Ibid. See Appendix E for a listing of the Top 15 Ballistic Missile Defense Contractors.



program will continue to lobby for its longevity in the form of TMD and NMD. The genuine and pressing nature of the ballistic missile threat facing the United States, the financial rewards that civilian defense contractors stand to reap from BMD development, and the considerable political lobby that supports ballistic missile defenses, are examples of some of the key factors which seem likely to drive the U.S. path to NMD.

### **C. THE WAY AHEAD**

This thesis unfolds in four phases. Chapter II provides a survey of the WMD and ballistic missile capabilities of several threat countries which are of concern to the United States. The nature of the ballistic missile threat has been the most important driving factor in U.S. NMD debates. While the capabilities of several threat countries are considered to be “developing,” these nations have made marked improvement in their WMD and ballistic missile capabilities in just the past few years. A 1995 national intelligence estimate, however, stated that no nation, other than the declared nuclear powers, would obtain a ballistic missile capable of threatening North America within the next fifteen years by any means. This intelligence estimate has been used by NMD opponents to justify their position against missile defenses. The upward trend in the capability and lethality of missile systems, coupled with the proliferation of these systems through technology trade, call into question this intelligence estimate. Chapter II will also call this estimate into question.

In Chapter III, other factors, in addition to the threat, will be identified and explained. Four distinct paths have been identified in this chapter to address the NMD and ABM Treaty debate. Chapter III frames each of the four scenarios with driving factors that have been

relevant in past national ABM system debates. Which factors appear to be at work in today's NMD debate will be examined and then compared to the four paths postulated in this thesis. In doing this, a better insight can be gained into what path towards NMD the United States is on. Chapter III will conclude by identifying this path.

Chapter IV will bridge the gap between theory and reality by examining which BMD systems currently under development are eroding of the ABM Treaty regime, and what the potential implications might be. The Navy Theater Wide system is one of the most prominent systems in this class. The effect of the Navy Theater Wide system on the ABM Treaty regime will be discussed, as will its potential effect on future U.S. Navy force structure and planning. Chapter V is the conclusion.

The ongoing debate over the continued utility of the ABM Treaty and its relationship to a proposed national missile defense system is one of the most relevant national security topics facing the United States. The decisions about this issue will have far-reaching and lasting implications for America's strategic posture and vital national interests. The conclusion to this thesis will briefly assess what shape some of those future implications may take for the U.S. Navy. Today the United States remains vulnerable to all forms of ballistic missile attack. This vulnerability is exacerbated by the expanding ballistic missile threat from rogue nations and non-state actors that may pay little heed to present U.S. strategic doctrine. Until the leadership of the United States comes full-circle and readdresses the restrictions the ABM Treaty places on national missile defense, and pursues an effective course of action to address those obstacles, it gambles with the safety and security of its own citizens.



## II. NATURE OF THE THREAT

In May 1972, the United States and the Soviet Union embarked on an historic journey which ended with the repudiation of the first law of all sovereign nations - the inherent right of self-defense. The signing of the 1972 Anti-Ballistic Missile (ABM) Treaty, and its subsequent 1974 Protocol, locked the two superpowers into a legally binding agreement under international law, which forbade either party to "develop, test, or deploy ABM systems or components which are sea-based, air-based, space-based, or mobile land-based."<sup>1</sup> The Treaty effectively sealed the United States and the Soviet Union into a bi-polar state of mutual vulnerability to each other's immense arsenal of offensive strategic nuclear missiles.

Such was the strategic situation twenty-six years ago. Since that time, the international security situation has changed drastically. Gone is the Soviet Union and what President Kennedy called "the twilight struggle" against Soviet communism. Gone is the relatively stable bi-polar nature of international relations, in which nations chose sides in a U.S.-Soviet superpower struggle. In its place, like a phoenix rising from the ashes of a century of warfare, is an emerging multi-polar international security structure that is similar to the international security structure of the late nineteenth century. Many Third World nations have advanced technologically since 1972, and the major Western powers have come to find that they have lost their monopoly on WMD and ballistic missile technologies.<sup>2</sup>

In response to this development, many Western nations, including the United States,

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<sup>1</sup> ACDA, ABM Treaty text; see Appendix A.

<sup>2</sup> McMahon, p. 129.

have begun to consider developing national ballistic missile defense systems. The one factor which is consistently driving Western nations' perceived need for some type of homeland defense against ballistic missiles is the nature of the threat. For many nations, the threat is not emerging, but already present. For the United States, the threat to the continental United States is still emerging, but it is emerging more quickly than NIE 95-19 *Emerging Missile Threats to North America During the Next Fifteen Years*, November 1995 has stated. The key to estimating how long the United States has to respond to a missile threat is not, as is currently the practice, to determine how long it takes a rogue state to produce ICBMs once it has decided to do so. Rather, U.S. planning should be based on how long a rogue state needs to purchase the requisite technology and field missiles once the intelligence community has convincing evidence that either their development or purchase is under way.<sup>3</sup>

Most of the nations discussed in this chapter pose either a present or near-term WMD and ballistic missile threat to the United States, or have expressed intention to be a threat once they have obtained the capability to do so. Nations such as Ukraine, Belarus, and Kazakhstan have been included not because they present a potential threat to the United States *per se*, but because they are sources of WMD and ballistic missile technology proliferation to other hostile nations such as Iran and Iraq. Many other nations, such as Britain, France, Brazil, Argentina, and South Africa, have or are capable of developing the requisite WMD and ballistic missile assets which can threaten the continental United States, but allies and friends will not be addressed since they are not considered threatening to the United States.

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<sup>3</sup> Heritage Foundation, *Defending America*, p. 16.

## **A. NORTHEAST ASIA**

The United States has gone to war three times in the past 60 years to prevent the rise of a regional hegemon in Asia and to protect American vital interests in the region. Recent developments in Northeast Asia are particularly troubling to the United States. China appears to be emerging as an economic superpower and a potential regional hegemon, and North Korea has become increasingly unstable due to its depressed economic and social conditions. Both of these countries have significant WMD and ballistic missile assets at their disposal, and are hostile to the United States.

### **1. *China***

With the exception of Russia, China is currently the only other nation known to possess a nuclear intercontinental ballistic missile (ICBM) arsenal which can reach targets in the 48 contiguous states of America. Information about the exact number of WMD-capable missiles in China's possession is often difficult to obtain due to the secretive nature of China's military and political organizations. China probably has over 200 ballistic missiles which can be classified as "strategic." Even though China has been a nuclear-capable power since 1964, developing an intercontinental ballistic missile capability shortly thereafter, the Chinese threat to the United States has mainly been viewed in terms of an unauthorized or accidental nuclear missile launch. This is no longer the only type of threat that the Chinese ballistic missile arsenal poses to the United States. China's burgeoning economic, technological, and industrial power has led many analysts to conclude that the United States and China are destined to become major rivals in the Asia-Pacific region early in the 21<sup>st</sup> century, perhaps

ultimately clashing in a major power conflict.<sup>4</sup>

The Chinese have long had an advanced chemical warfare (CW) program, including research and development (R&D), production, and weaponization capabilities.<sup>5</sup> The current inventory of chemical agents consists of a full range of traditional agents, in addition to more advanced agents which Chinese researchers are reportedly pursuing. China has a wide variety of delivery systems for chemical agents, including ballistic missiles of varying ranges. China has consistently claimed that it never researched, manufactured, produced, or possessed biological weapons and that it would never do so. China, however, does possess an advanced biotechnology infrastructure and the bio-containment facilities to perform research and development of lethal pathogens.<sup>6</sup> Additionally, prior to signing of the Biological and Toxin Weapons Convention (BWC) in 1984, China is known to have worked on a biological warfare (BW) program. It would be prudent to assume that China has probably maintained its pre-BWC offensive BW program. The Chinese have probably weaponized their biological agents so that they can be delivered by ballistic missiles as well.

China has been a declared nuclear-weapon state since 1964, and its nuclear weapons program is not a target of international non-proliferation efforts.<sup>7</sup> China continues to make a broad and direct impact on the spread of nuclear arms and related delivery systems,

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<sup>4</sup> Bernstein and Munro significantly amplify upon this theme in *The Coming Conflict With China*, citing numerous reliable sources that support their assessment that a period of heightened tensions, possibly even conflict, may develop between the United States and China during the first half of the 21<sup>st</sup> century.

<sup>5</sup> U.S. Department of Defense, OSD, *Proliferation: Threat and Response*, p. 10.

<sup>6</sup> Ibid.

<sup>7</sup> Spector, McDonough, and Medeiros, p. 49.

affecting the nuclear policies and nuclear potential of many countries of proliferation concern. China acceded to the Nuclear Nonproliferation Treaty (NPT) in 1992 as a nuclear-weapon state. Since July 30, 1996, China has been under a self-imposed moratorium on nuclear testing and has signed the Comprehensive Test-Ban Treaty (CTBT).<sup>8</sup> China is not believed to be producing fissile material for nuclear weapons, but it has a stockpile of fissile material large enough to increase and improve its weapon inventory.<sup>9</sup> Moreover, there has been recent and mounting evidence that the Chinese may be pursuing a multiple re-entry vehicle/multiple independently targetable reentry vehicle (MRV/MIRV) capability for their nuclear ballistic missile force.<sup>10</sup> Such a development would call into question the credibility of China's "no first-use" strategic nuclear weapons policy, and the assertion that the Chinese nuclear arsenal is strictly defensive. MRV/MIRV warheads are inherently destabilizing; they offer an incentive to the possessor to strike first in the event of a crisis, rather than lose them in a hit by a single nuclear-warhead missile.

China has an extensive and well-established ballistic missile industrial infrastructure and has developed and produced a variety of land and sea-based ballistic missiles. Only Russia and the United States have more extensive production capabilities for ballistic missiles.

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<sup>8</sup> U.S. Department of Defense, OSD, *Proliferation: Threat and Response*, p. 9-10.

<sup>9</sup> *Ibid*, p. 10.

<sup>10</sup> Lamson and Bowen, "One Arrow, Three Stars: China's MIRV Programme," *Jane's Intelligence Review*. While noting that "a precise assessment of China's progress in developing and integrating the necessary technologies (for MIRV warheads) using open source-materials is very difficult, if not impossible" (p. 266), the authors point out several Chinese missile developments that hint strongly at a MIRV development program, such as: developing smaller, lighter warheads with improved yield-to-weight ratio, missile flight tests involving MRVs in their *DF-5* missile program, testing of a *DF-3* missile with a MIRV-type nose cone, development of dual-use civilian space-launch technologies with MIRV applications, and information obtained on Russian MIRV-warhead missiles.



Since 1964, the Chinese have publicly held a “no first use” nuclear weapons policy and have consistently claimed that their nuclear ballistic missile force is designed to serve as a strategic deterrent against Russia and the United States. This claim was called into serious question again on January 23, 1996, when *The New York Times* reported that a Chinese official communicated a thinly veiled threat to former Ambassador Charles Freeman that China could act militarily against Taiwan without fear of U.S. intervention, because American leaders “care more about Los Angeles than they do about Taiwan.”<sup>11</sup> Moreover, in recent years, China has embarked on a ballistic missile modernization program. While adding more missiles and launchers to its inventory, China is also concentrating on replacing its liquid-propellant missile arsenal with two new classes of mobile solid-propellant missiles, the *DF-31* (8,000 km) and the *DF-41* (12,000 km). This undertaking reflects Chinese concerns for survivability, maintenance, and reliability. Both the *DF-31* and the *DF-41* possess MIRV-capable warheads.<sup>12</sup>

Additionally, China has at least one active *Xia*-class nuclear ballistic missile submarine (SSBN) which is expected to see service into the next century. It is equipped with 12 *JL-1* SLBMs with a range of 1,700 km. The *Xia* design has fallen short of Beijing’s expectations, so the Chinese are busy designing a SSBN designated TYPE 094, to be constructed early in the 21<sup>st</sup> century. It will take advantage of the modern Russian and Western submarine technologies that the Chinese are acquiring today. The Office of Naval Intelligence (ONI)

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<sup>11</sup> Tyler, “As China Threatens Taiwan, It Makes Sure U.S. Listens,” *The New York Times*, p. A3.

<sup>12</sup> Lamson and Bowen, p. 267.

expects the TYPE 094 to be a dramatic improvement over the Xia- class:

The TYPE 094 SSBN will carry the new *JL-2* ballistic missile with a range of over 4,000 nautical miles. When deployed in the next decade, this missile will allow Chinese SSBNs to target portions of the United States for the first time from operating areas located near the Chinese coast.<sup>13</sup>

Jane's Information Group places the expected range of the *JL-2* at 8,000 km.<sup>14</sup>

China is pursuing a strategy of close political and economic relations with a number of nations. In support of this strategy, China continues its role as a supplier of military and technical assistance. The profits from these sales are used to finance military operating costs. Beijing has provided ballistic missile and related technology, as well as chemical and nuclear technology, to several Middle Eastern and South Asian countries. China is believed to have given Pakistan the design for a nuclear weapon in the early 1980s, along with a quantity of highly enriched uranium for one or two nuclear devices. In addition, China has sold two small research reactors and an experimental calutron to Iran and had signed an agreement to build two 300 MWe power reactors in Iran.<sup>15</sup> However, strong pressure from the United States eventually brought assurances from Beijing that it would cease the transfer of nuclear-related materials and technology. With respect to missile exports, China has reportedly aided the

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<sup>13</sup> Office of Naval Intelligence, *Worldwide Submarine Challenges*, 1997; p. 22.

<sup>14</sup> Duncan Lennox, ed. *Jane's Strategic Weapons Systems*, Offensive Weapons Tables: Sea-Based Ballistic Missiles (Section JSWS-Issue24).

<sup>15</sup> Spector, McDonough, and Medeiros, p. 49. "Calutrons" can separate almost any stable isotope, different isotopes simultaneously, and may be used to ionize and separate compounds. High-quality enriched stable isotopes produced in calutrons can be irradiated with reactors or accelerators to produce radioisotopes. See the Oak Ridge National Laboratory Homepage for further information on calutrons. (<http://www.ornl.gov/publications/labnotes/feb95/calutron.html>)

missile programs of Pakistan, Iran, Libya, Syria, and possibly, North Korea in recent years.<sup>16</sup> Perhaps most troubling of all are recent reports that two U.S. firms have been accused of helping the Chinese develop dual-use technology for satellite launching, which can also be used in developing improved ICBMs that can more accurately target the United States.<sup>17</sup> If such technology has found its way into Chinese hands, how long will it be before it finds its way to Tehran or Pyongyang?

## **2. North Korea**

Among the developing countries that possess WMD and ballistic missile programs, North Korea presents the most serious future security threat to the United States. The threat posed by North Korea is not only due to its own WMD and missile programs, but also due to the fact that Pyongyang has been selling its WMD and ballistic missile technology, including even entire systems, to several countries which are known to harbor deep anti-American sentiment. This trend has continued despite the fact that North Korea's economic and social disarray has increased to drastic proportions.<sup>18</sup>

Since the late 1980s, the North Koreans have had an active chemical warfare

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<sup>16</sup> Spector, McDonough, and Medeiros, p. 49.

<sup>17</sup> Timothy W. Maier, "Helping Beijing Deliver the Bomb," *Insight*. As Henry Sokolski, a former Pentagon nonproliferation official is quoted by Maier as saying, "you don't have to be a rocket scientist to understand that the technology to fire rockets carrying satellites into space and prevent their malfunction is identical to that for launching an ICBM against the U.S. mainland."

<sup>18</sup> *Jane's Defence Weekly* quoted a U.S. Defense Intelligence Agency (DIA) conclusion, contained in a report by the Senate Select Committee on Intelligence, that "it is a virtual certainty that the North Korean regime will not exist in its current guise in not too many years ahead," and that "the DIA said that many intelligence analysts now assess that there is a potential collapse of the current political system in North Korea within three years." Barbara Starr, "N. Korean Government 'Could Collapse by 2001'."

production capability. Their indigenous chemical arms production facilities increased between 1990 and 1995. Consequently, Pyongyang is believed to have a sizable stockpile of chemical weapons of various types. Included in their arsenal are large quantities of nerve, blister, choking, and blood agents, which the North Koreans are readily able to weaponize into ballistic missile warheads. North Korea's chemical program is under no form of international monitoring, since North Korea is not a signatory to the Chemical Weapons Convention (CWC). It is not likely to become a Party to the CWC in the near-future because of its aversion to the required intrusive inspections and verification provisions. North Korea also has been pursuing R & D related to BW capabilities for the past 30 years. North Korean resources, including a bio-technical infrastructure, are sufficient to support production of limited quantities of infectious biological warfare agents and toxins. North Korea has the capability to develop these agents and toxins into ballistic missile weaponry, even though it has ratified the BWC.

For years, North Korea, a signatory to the NPT, is believed to have pursued a secretive nuclear weapons program centered around a number of facilities at the Yongbyon nuclear research center.<sup>19</sup> Although North Korea signed the NPT in 1985, it did not permit International Atomic Energy Agency (IAEA) inspections of the Yongbyon facility until May 1992. During that seven-year hiatus, U.S. intelligence agencies believe that the North Koreans may have extracted plutonium at the Yongbyon reprocessing plant for weaponization purposes. They estimate that North Korea may have obtained as much as 12 kg of plutonium and that there is a "better than even chance" it has manufactured one or two nuclear

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<sup>19</sup> Spector, McDonough, and Medeiros, p. 103.

weapons.<sup>20</sup> In October 1994, as part of a complicated understanding with the United States, North Korea agreed to freeze operations at most of these nuclear facilities.<sup>21</sup>

For the past 17 years, North Korea has been producing their own *Scud* "B" and "C" missiles, based on reverse-engineered Soviet *Scud* missiles reportedly sold to North Korea by Egypt, and developing the more recent *Nodong* and *Taepo-Dong* missiles.<sup>22</sup> In May 1993, North Korea reportedly flight-tested the *Nodong-1*, a medium-range ballistic missile (1,000 km range), capable of carrying nuclear, chemical, or biological payloads.<sup>23</sup> U.S. intelligence officials have been waiting for the North Koreans to carry out a full range test of the *Nodong-1* since September 1997.<sup>24</sup> Most recently, North Korea has been developing two new multistage missiles; *Taepo-Dong-1* and *Taepo-Dong-2*. Both missiles are two-stage systems and will probably employ separating warheads. One of these missiles, the *Taepo-Dong-2*, will have the potential to strike portions of the western United States, including all of Alaska and Hawaii.<sup>25</sup> According to testimony by intelligence officials, the *Taepo-Dong-2* missiles could

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<sup>20</sup> Spector, McDonough, and Medeiros, p. 103.

<sup>21</sup> The freeze in North Korean operations has apparently been short-lived. *The New York Times* has recently reported that "North Korean officials have announced that they are suspending their efforts to carry out the 1994 nuclear freeze agreement that was intended to dismantle that country's nuclear program." See Elisabeth Rosenthal, "North Korea Says It Will Unseal Reactor," 13 May 1998, *The New York Times*.

<sup>22</sup> The DPRK has reportedly produced approximately 100 of each of the *Scud* "B" and "C" variants and is now capable of producing 100 Scuds per year. These variants have been exported to Egypt, Iran, Syria, and Libya; (Bruce Blanche, "Missile Threat of North Korea Causing Concern").

<sup>23</sup> Spector, McDonough, and Medeiros, p. 105.

<sup>24</sup> Beaver, "U.S. Interest Increases as Test Looms for *Nodong-1*," p. 6.

<sup>25</sup> In May 1997, state legislators from Alaska adopted a resolution asking the federal government to provide protection against WMD-armed ballistic missiles attacks on an equal basis with the 48 contiguous states as a direct result of revelations concerning the extent of North Korea's

be operational by the year 2000.<sup>26</sup>

Pyongyang continues to place a high priority on the development and sale of ballistic missiles, equipment, and related technology. North Korea operates a complex, integrated network of trading companies, brokers, shippers, and banks that facilitate WMD weapon and ballistic missile-related trade.<sup>27</sup> This trade involves complete systems, components, manufacturing and test equipment, and technology. North Korea also has a history of selling their most advanced and long-range ballistic missile technology to a number of anti-Western nations, including Iran, Syria, and Libya. North Korea's missile program has relied most heavily on Iranian financing.<sup>28</sup> In return for this critical influx of hard currency, Iran has been receiving some of North Korea's most advanced nuclear-capable ballistic missiles.<sup>29</sup> North Korea uses sales of ballistic missile equipment and technologies to sustain its depressed economy and to support continued R&D for its WMD and ballistic missile programs. Barring a diplomatic breakthrough, North Korea is likely to continue such missile sales and to market its most advanced equipment and technology to nations of the Middle East and South Asia.<sup>30</sup>

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intercontinental ballistic missile program. (Legislature of the State of Alaska. Senate Joint Resolution No. 30, *Defense of Alaska From Nuclear Attack*, 2 May 1997, 20<sup>th</sup> Legislature, First Session). See also "Alaska's Missile Defense Appeal: A Model for Other States" by Baker Spring, The Heritage Foundation.

<sup>26</sup> Joseph, p. 2.

<sup>27</sup> U.S. Department of Defense, OSD, *Proliferation: Threat and Response*, p. 8.

<sup>28</sup> North Korea has reportedly sold approximately 400 missiles to Iran and Syria worth \$500 million in U.S. dollars. (Bruce Blanche, "'Scud' Development in North Korea.")

<sup>29</sup> Spector, McDonough, and Medeiros, p. 105.

<sup>30</sup> U.S. Department of Defense, OSD, *Proliferation: Threat and Response*, p. 4.

## **B. SOUTHERN ASIA**

The Asian subcontinent has usually been only a passing concern for American defense planners. India and Pakistan were antagonistic towards each other, but conflicts were always contained within the conventional realm. India and Pakistan both had maintained ambiguous stances concerning their nuclear capabilities in the interests of deterrence. Five surprise underground nuclear tests by India in May 1998, and a concurrent pledge by India's newly elected Prime Minister to pursue nuclear weaponization, have dramatically increased tensions on the Asian subcontinent. Pakistan responded to India's actions with its own series of nuclear tests, and also pledged nuclear weaponization. The attention of the other declared nuclear powers, especially the United States, is now focused squarely on the Asian subcontinent.

### ***1. India***

While India does not currently pose a direct missile threat to the continental United States, it does pose an immediate regional threat. India also possesses considerable ballistic missile technology developed through its space-launch program. Since India is capable of projecting a heavy satellite into earth orbit, it almost certainly can develop a long-range intercontinental ballistic missile which could reach the United States. Additionally, India has a full range of WMD capability, including nuclear weapons. For the foreseeable future, India's major security preoccupations are with potential threats from Pakistan and China.

India has an extensive commercial chemical industry and it produces a vast number of chemicals for domestic consumption. India also has exported a wide array of chemical products, including Australia Group-controlled items, to several countries of proliferation

concern in the Middle East. India's BW technology is also well developed. India has many well-qualified scientists, numerous pharmaceutical production facilities, and bio-containment facilities for research and development of dangerous pathogens. At least some of the facilities are being used to support R&D for biological defense work.<sup>31</sup>

India first demonstrated a nuclear weapons capability by detonating a nuclear device in May 1974. In April 1994, the U.S. State Department submitted a report to Congress projecting that India "could assemble a limited number of nuclear weapons in a relatively short time frame."<sup>32</sup> The report also noted continued testing, over the preceding year, of two nuclear-capable, surface-to-surface ballistic missiles - the *Prithvi* and the *Agni* - with approximate ranges of 150-250 km and 2,500 km. India has now acknowledged possessing nuclear weapons in the aftermath of its surprise nuclear tests. India's new Hindu nationalist government has stated recently that it would review India's nuclear policy and "induct nuclear weapons" into its military arsenal.<sup>33</sup> India's new Prime Minister Atal Bihari Vajpayee has personally endorsed this new nuclear stance, pledging that he would do everything possible for Indian national security and would "exercise all available options, including the nuclear option."<sup>34</sup> As a result of these recent developments, India can now be counted among the "declared" nuclear states.

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<sup>31</sup> U.S. Department of Defense, OSD, *Proliferation: Threat and Response*, p. 4.

<sup>32</sup> Spector, McDonough, and Medeiros, p. 89.

<sup>33</sup> Burns, "Hindu Party is Candid on Nuclear Arms but Not Much Else." *The New York Times*, 19 March 1998.

<sup>34</sup> Chellaney, "India Prepares to Take a More Assertive Nuclear Posture." *International Herald Tribune*, 24 March 1998.



According to conservative estimates of India's nuclear weapons potential, published in 1992, India at that time had enough plutonium, not subject to IAEA inspections, for nearly sixty nuclear bombs. By 1995, it was projected to have enough plutonium for as many as eighty.<sup>35</sup> India also has the ability to enrich uranium, which could add to its stocks of weapons-usable material. The capabilities of its enrichment facilities, at the Bhabha Atomic Research Center (BARC) and Rattehalli, have not been disclosed; neither is subject to IAEA monitoring. A disturbing report is contained, however, in a recent article of *Jane's Intelligence Review*, which discloses that India has made a significant breakthrough in the indigenous production of tritium at BARC.<sup>36</sup> Indian scientists there have managed to extract highly enriched tritium from heavy water used in power reactors. Highly enriched tritium is used in the construction of a Hydrogen fusion weapon. As the article further states,

This is not to say that India has already secretly developed the H-bomb, but the very fact that tritium, according to all available indications, is now being stockpiled puts India in a comfortable position in terms of nuclear deterrence, given the ambitions of Pakistan and the already-nuclear China.<sup>37</sup>

India dispelled all doubt in May 1998, when it claimed that one of the five underground nuclear tests had been a "very big bomb"—an H-bomb.

India has an extensive, largely indigenous ballistic missile program, including

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<sup>35</sup> Spector, McDonough, and Medeiros, p. 89.

<sup>36</sup> Rethinaraj, "Tritium Breakthrough Brings India Closer to an H-bomb Arsenal," *Jane's Intelligence Review*, January 1998, p. 29.

<sup>37</sup> Ibid.

development and production infrastructures for both solid and liquid propellant missiles.<sup>38</sup> Its program is one of the world's most ambitious, and is derived in part from India's significant space program.<sup>39</sup> By striving to achieve independence from foreign suppliers, India is hoping to alleviate problems caused by the Military Technology Control Regime (MTCR). India's *Prithvi* SRBM and its developmental *Agni* MRBM will provide New Delhi with two mobile ballistic missile platforms. The Army's version of the *Prithvi* is being produced now; it has a payload of 1,000 kilograms and a range of 150 kilometers. India also has conducted at least two test flights of an Air Force version of the *Prithvi* with a 250 kilometer range and a 500 kilogram payload. All versions of the *Prithvi* are reportedly nuclear-capable and can be fitted with free-fall nuclear weapons with minimal fuss or reconfiguration.<sup>40</sup> Claiming the project was intended to demonstrate missile technological advances, India has also conducted three test flights of the *Agni* missile, which has an intended range of 2,000 kilometers, with a 1,000 kilogram payload. The Indian Defense Minister recently has stated that the *Agni* program is "very much on."<sup>41</sup> India is likely planning a follow-on to the *Agni*. Additionally, India's space program consists of three space launch vehicles (SLVs) that can carry payloads from 150 to 3,000 kilograms. While India may have the ability to convert these SLVs into ICBMs, it has shown no indication to date of making the required modifications.<sup>42</sup>

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<sup>38</sup> U.S. Department of Defense, OSD, *Proliferation: Threat and Response*, p. 17.

<sup>39</sup> Sheppard, p. 32.

<sup>40</sup> Ibid.

<sup>41</sup> U.S. Department of Defense, OSD, *Proliferation: Threat and Response*, p. 19.

<sup>42</sup> Ibid, p. 19-20.

Nonetheless, the space program directly supports New Delhi's missile efforts through shared research, development, and production facilities.

The primary proliferation concerns surrounding India center on its chemical weapons and ballistic missile capabilities. At least a portion of Iran's chemical stockpile might have been procured from India. India is usually not mentioned as one of a number of nuclear technology proliferators. Now that India's Hindu nationalist party has come into power and dispelled all ambiguity by "going nuclear," it is reasonable to assume that India might be tempted to join the nuclear technology proliferation fray in the near future. If India does opt for this path, then it can also be expected to share its considerable ballistic missile technology.

## **2. *Pakistan***

Like India, Pakistan is a threat to the regional interests of the United States, but does not possess the intercontinental ballistic missiles required to draw direct American attention. Islamabad, like New Delhi, also has a full range of WMD capabilities available for military applications. Pakistan's primary security concern centers on the Indian threat.

Pakistan is a CW-capable country, but its capabilities are limited. It remains dependent on a number of nations for assistance. Pakistan has imported a number of chemicals that can be used to make chemical agents and is moving slowly towards a commercial chemical industry capable of producing all precursor chemicals needed to support a chemical weapons stockpile.<sup>43</sup> Biological technology is generally well developed in Pakistan, which has a capable, but less developed, bio-technology infrastructure and may be seeking to upgrade hardware for selected bio-technology facilities. Nonetheless, Pakistan

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<sup>43</sup> U.S. Department of Defense, OSD, *Proliferation: Threat and Response*, p. 17.

probably has the resources and capabilities needed to support a limited biological warfare research and development effort.

Pakistan, which also is not a party to the NPT, secretly launched its nuclear program in 1972, in the aftermath of its defeat in the 1971 Indo-Pakistan War. The program, which accelerated dramatically after India's nuclear test in May 1974, made significant progress by the early 1980s. A 1983 U.S. State Department analysis of the Pakistani nuclear-weapons effort declared that there was "unambiguous evidence that Pakistan is actively pursuing a nuclear weapons development program."<sup>44</sup> The report highlighted Pakistan's progress in key areas of weapon's manufacture, its critical dependence on clandestine efforts to procure nuclear equipment from private Western firms, and its receipt of nuclear assistance "in the area of fissile material production and possibly also nuclear device design."<sup>45</sup> The centerpiece of the program is Pakistan's Kahuta enrichment plant, which is not subject to IAEA safeguards. In April 1994, the State Department submitted a report to Congress projecting that Pakistan "could assemble a limited number of nuclear weapons in a relatively short time frame."<sup>46</sup> In response to May 1998 Indian nuclear tests, Pakistan responded in kind shortly thereafter. The Asian subcontinent has been propelled into a period of nuclear tension reminiscent of U.S.-Soviet Cold War nuclear stand-offs. Much of Pakistan's potential arsenal apparently includes a number of complete, but unassembled, nuclear weapons, which could

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<sup>44</sup> Spector, McDonough, and Medeiros, p. 97.

<sup>45</sup> Ibid.

<sup>46</sup> Ibid, citing U.S. State Department, "Report to Congress: Update on Progress Toward Regional Nonproliferation in South Asia," April 1994.

be brought to bear in a matter of days. Recent statements by Pakistani leaders, as a direct result of increased nuclear tension, have indicated an intention to weaponize their ballistic missiles with nuclear warheads. In all, Pakistan might be able to deploy between fifteen and twenty-five nuclear weapons.<sup>47</sup>

The Pakistanis have made significant strides in upgrading their ballistic missile program ever since India test-fired the long-range *Agni* ballistic missile in 1989. Unlike India, however, Pakistan has no space launch program to generate indigenous ICBM technology. The Pakistanis must seek outside assistance and components to develop intercontinental missiles. Pakistan's ailing indigenous capability has depended heavily on Chinese assistance in the form of complete missile systems and designs for a missile factory and nuclear warheads.<sup>48</sup> Islamabad has three ballistic missile systems: the Pakistani-produced *Hatf-1* (80 km), the *Hatf-2* (300 km) mobile SRBM, and the *Hatf-3*. The Pakistanis test-fired the *Hatf-3* in July 1997. It achieved a range of 800 km.<sup>49</sup> Pakistani engineers recently have developed a 1,500 km missile referred to as the *Ghauri*, or *Mk III*, which is probably intended to counter India's *Agni* IRBM program.<sup>50</sup> For the future, Pakistan, like India, hopes to achieve independence from foreign sources and produce indigenous long-range missiles and has exerted significant effort to do so. Pakistan will, in all likelihood, continue to need

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<sup>47</sup> Spector, McDonough, and Medeiros, p. 97.

<sup>48</sup> Sheppard, p. 32. In fact, as Sheppard points out: "Pakistan is nearing the completion of a missile factory near Rawalpindi using blueprints and equipment supplied by China for the indigenous production of the *M-11* (CSS-7/DF-11) missile...The missile factory could also be manufacturing the 600-800 km *M-9* (CSS-6/DF-15) missile, designated *Hatf-3* by Pakistan."

<sup>49</sup> Ibid.

<sup>50</sup> Ibid.

significant foreign assistance in key technologies for many years to come.

Like India, Pakistan usually does not come to mind immediately as a generator of WMD and ballistic missile proliferation. It is normally on the receiving end of the proliferation pipeline. Pakistan has demonstrated a nuclear capability, and does maintain friendly relations with several Middle Eastern states who would be interested in that technology. From this point of view, Pakistan could be considered a potential low-end proliferator.

### **C. THE MIDDLE EAST AND NORTH AFRICA**

The 1991 Gulf War reaffirmed America's commitment to defend its vital economic interests in the Middle East. The relative ease with which the United States disposed of Iraq's armed forces in that conflict is unlikely to be repeated in the future. Several states in the Middle East and North Africa have set about obtaining the most advanced WMD and ballistic technology possible. Most of these states are hostile to the United States and have expressed a commitment to obtain WMD-armed ballistic missiles to threaten the safety of the continental United States.

#### **1. Iran**

Since the Islamic Revolution, Iran has not hidden its hatred of the "Great Satan." The prospect of a WMD-armed and ICBM-capable Iran is alarming. The United States has gone to great lengths to curb the proliferation of WMD and ballistic missile technology to Iran.

Iran has been in the chemical weapons business since the first Iraqi chemical-warheaded *Scuds* rained down upon them during the Iran-Iraq war. Tehran has put a

premium on its chemical weapons program due to its perceived inability to respond in kind to Iraq's wartime chemical attacks, and the subsequent revelation of significant Iraqi efforts at developing advanced agents, such as the highly persistent nerve agent VX.<sup>51</sup> Iran probably has several hundred tons of blister, blood, and choking agents stockpiled, with much of this supply believed to have come from China and India.<sup>52</sup> Iran has ratified the CWC, under which it is obligated to eliminate its chemical program over a period of years. Despite this obligation, Iran continues to upgrade and expand its chemical warfare production infrastructure and munitions arsenal.<sup>53</sup>

Iran's biological warfare program also began during the Iran-Iraq War. The Iranian BW program is probably still in the research and development stage, but has benefitted considerably from civilian pharmaceutical development. Iran is conducting wide-ranging research on toxins and organisms with a potential use in biological warfare, and has purchased dual-use biotechnology equipment from Europe and Asia.<sup>54</sup> Iran also has the indigenous infrastructure and hardware needed to stand-up a significant production infrastructure. These developments are taking place despite Iran's ratification of the BWC.

Iran, which is also a party to the NPT, is believed by U.S. authorities to be pursuing a secret nuclear weapons program.<sup>55</sup> According to CIA estimates, Iran's nuclear weapons

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<sup>51</sup> U.S. Department of Defense, OSD, *Proliferation: Threat and Response*, p. 27.

<sup>52</sup> Barbara Starr, "USA Moves to Block Weapons Danger," p. 40.

<sup>53</sup> U.S. Department of Defense, OSD, *Proliferation: Threat and Response*, p. 27.

<sup>54</sup> Barbara Starr, "USA Moves to Block Weapons Danger," p. 40.

<sup>55</sup> Spector, McDonough, Medeiros, p. 119.

program is still at an early stage. China has been the primary supplier of nuclear-related technology to Iran.<sup>56</sup> Iran's Atomic Energy Council (AEC) has recently expressed a renewed interest in the acquisition of two 300 MW reactors from China.<sup>57</sup> In addition, Iran's Muslim fundamentalist regime has been accelerating the pace of their program by purchasing nuclear and ballistic missile material and technology illicitly from Russian sources, and attempting to acquire complete Russian nuclear devices.<sup>58</sup>

Iran has an ambitious ballistic missile program. Among developing nations, the emerging threat it poses to the United States is second only to that of North Korea. Tehran has made significant progress in the last few years toward its goal of becoming self-sufficient in ballistic missile production. Iran's goal is to establish an indigenous capability to produce medium and long-range ballistic missiles.<sup>59</sup> Like many of Iran's other efforts, success with future missile capabilities will depend on obtaining equipment and technology from China, North Korea, and Russia. The United States and Israel are alarmed about the recent exchanges of Russian ballistic missile technology with Iran. As a recent article in *Jane's*

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<sup>56</sup> Spector, McDonough, Medeiros, p. 119.

<sup>57</sup> George, "Revival of Iran's Nuclear Ambitions Causes Alarm," p. 6. Additionally, there has been concern recently over the dismantling and sale of a South African zirconium plant to the Chinese. The plant is specialized for manufacturing zirconium tubing for nuclear reactor fuel and was dismantled and packaged prior to an "end-use statement" being filed by the Chinese in accordance with the NPT. There has been speculation that the zirconium plant will ultimately wind up in Iran. (See Al J. Venter, "Is Iran in RSA-China Zirconium Deal?").

<sup>58</sup> Spector, McDonough, and Medeiros, p. 119, citing "Testimony by Director of Central Intelligence Agency R. James Woolsey," before the House Foreign Affairs Committee, Subcommittee on International Security, International Organizations, and Human Rights, July 28, 1993; Patrick Worsnip, "CIA Chief Attacks Iran, Iraq Weapons Programs," *Reuters*, 26 September 1994.

<sup>59</sup> U.S. Department of Defense, OSD, *Proliferation: Threat and Response*, p. 27.



*Defense Weekly* has stated:

The Israelis claim that Iran, aided by Russian technology, is within 18 months of developing a liquid-fueled ballistic missile identified as the *Shihab-3*. This is claimed to be modeled on *SS-4* ('Sandal') technology with a range of 1,200 km and a payload of 700 kg. It is also working on another system, the *Shihab-4*, with a range of 2,000 km.<sup>60</sup>

It has also been reported that Israel has identified two other ballistic missiles in development by Iran, with ranges of up to 5,500 km and 10,000 km.<sup>61</sup> Israel has been so concerned by recent strides in Iran's ballistic missile capability that it has ordered its *Arrow* anti-tactical ballistic missile system to skip one developmental phase to go straight to production a year ahead of schedule.<sup>62</sup> Should Iran succeed in acquiring or developing intercontinental ballistic missiles, such as the North Korean *Taepo-Dong*, or any number of Russian ICBMs, it could directly threaten the continental United States.

In the future, as Iran becomes more self-sufficient at producing CW-BW agents and ballistic missiles, there is strong suspicion that it will become a supplier to other nations in the region. For example, it is highly feasible that Iran might supply its regional friends, such as Libya and Syria, with WMD and ballistic missile equipment and technology. There is

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<sup>60</sup> Michael R. Gordon, "U.S. Presses Russia on Iran and Missile Aid," *The New York Times*, p. 1; Bill Gertz, "Russia Conspiring with Iran on Missiles," *The Washington Times*, p. 1; Ed Blanche, "Iran is Warned Again of Missile Counteraction" and "Russia is Assisting Iran's Missile Drive, Says USA," *Jane's Defence Weekly*.

<sup>61</sup> Rathmell, "Iran's Missile Come Under Fire," p. 5. Rathmell's article, which was published shortly after Ed Blanche's "Iran is Warned Again of Missile Counteraction," notes that the *Shihab-3* is supposedly based on North Korea's *Nodong* missile, and he also places the range of the Iranian *Shihab-4* closer to 4,000 km.

<sup>62</sup> Ed Blanche, "Israel to Deploy Arrow Missile a Year Early," p. 29. The Israeli *Arrow* program is a U.S. -Israeli cooperative tactical ABM effort, largely funded by the United States.

precedent for such action: Iran supplied Libya with chemical agents in 1987.<sup>63</sup>

## 2. *Iraq*

Iraq has become something of a national security policy nightmare for the Clinton administration. Iraq's resistance to UNSCOM inspectors in early 1998 demonstrated significant shortfalls in America's coalition strategy of enforcing Iraqi compliance with UN resolutions. Ever since UNSCOM inspections were instituted following the Gulf War, Saddam Hussein has played a hide-and-seek game with his WMD and ballistic missile capabilities.

Although Iraq's chemical warfare program suffered extensive damage from Coalition bombing during the Gulf War, and from UNSCOM destruction and monitoring activities after the war, Iraq retains the technical knowledge to reconstitute and improve the chemical warfare capability it had prior to the Gulf War. Information released following Hussein Kamel's defection revealed that Iraq had hidden sophisticated chemical warfare capabilities from the United Nations, in spite of intrusive UNSCOM inspections. The depth and breadth of Iraq's previous chemical warfare efforts, the attempted rebuilding of key facilities since 1991, and the consistent pattern of deceiving UNSCOM inspectors concerning the scope of its capabilities indicate Iraq's intent to rebuild its CW capability at the first opportunity.

Iraq has claimed since 1991 that all of its biological agents and munitions were unilaterally destroyed after the Gulf War. Iraq's record of misrepresentation and the lack of documentation supporting its claims, however, leave the status of the Iraqi BW program open

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<sup>63</sup> U.S. Department of Defense, OSD, *Proliferation: Threat and Response*, p. 29.

to question.<sup>64</sup> In 1995, United Nations inspectors uncovered the extent of Iraqi lies and deception with the discovery of the BW production program at Al Hakam; mass production of *Bacillus anthracis* (anthrax) was begun in 1989, and some 8,500 acknowledged liters of the liquid, with a spore count of  $10^9$ /ml, had been produced. Most of this liquid was used to fill weapons.<sup>65</sup> Iraq also reviewed and developed the biological carcinogen aflatoxin for weaponization. Weaponization trials using aflatoxin were conducted in November 1989, May 1990, and August 1990, and at least two aflatoxin warheads were developed for Scud missiles prior to the Gulf War.<sup>66</sup> Iraq probably still retains some biological agents and weapons. It also has a number of medical, veterinary, and university facilities where bio-technical research and development can be undertaken. Some of these facilities are staffed by former members of Iraq's biological warfare program.<sup>67</sup> Iraqi President Saddam Hussein evidently places great value on his chemical and biological weapons programs, particularly since UNSCOM weapons inspectors discovered and dismantled the immense and secretive Iraqi nuclear weapons program immediately following the 1991 Gulf War. Australian Ambassador Richard Butler, chairman of UNSCOM, agrees with this view. Deadly germs, he said in a recent interview, were still the most mysterious and dangerous weapon in Iraq's hands: "They are

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<sup>64</sup> U.S. Department of Defense, OSD, *Proliferation: Threat and Response*, p. 32.

<sup>65</sup> Venter, "UNSCOM Odyssey: The Search for Saddam's Biological Arsenal," p. 17.

<sup>66</sup> George, "Saddam's Cancer Bombs Scare," p. 5.

<sup>67</sup> U.S. Department of Defense, OSD, *Proliferation: Threat and Response*, p. 32.

easier and cheaper to make than any other arms and can be deployed with less difficulty.”<sup>68</sup> Recent evidence suggests that Iraq used not only chemical weapons against Iran during the Iran-Iraq War, but also may have used biological weapons.<sup>69</sup> Like its other programs, Iraq clearly intends to reestablish its biological warfare effort. It is well positioned to do this because of the assets it retains, and could resume limited agent production fairly quickly, if United Nations sanctions and on-site monitoring end.<sup>70</sup>

Prior to the Gulf War, Iraq had developed an advanced nuclear weapons program (code named “Petrochemical 3”), and may have been within months of producing a nuclear device, despite being a signatory to the NPT. Since the end of the Gulf War, Iraq may have continued to conduct research on nuclear weapons, although United Nations Security Council Resolution (NSCR) 687 prohibits this type of research.<sup>71</sup> In September 1994, IAEA Inspector General Hans Blix stated that his agency had completed the destruction and removal of all known nuclear weapons-usable material, facilities, and equipment in Iraq that might have the potential to contribute to the development of nuclear weapons.<sup>72</sup> In late 1996, however, Blix revisited his previous statement. He expressed concern that, although the actual weapon production and research apparatus had been destroyed, “the know-how and

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<sup>68</sup> Venter, “UNSCOM Odyssey: The Search for Saddam’s Biological Arsenal,” p. 16, quoting Ambassador Richard Butler.

<sup>69</sup> Venter, “Biological Warfare Atrocities Revealed,” p.1.

<sup>70</sup> U.S. Department of Defense, OSD, *Proliferation: Threat and Response*, p.32.

<sup>71</sup> Ibid, p. 31.

<sup>72</sup> Spector, McDonough, Medeiros, p. 126, citing Hans Blix in IAEA, “Highlights of IAEA Director General’s Statement to the 38<sup>th</sup> Regular Session of the IAEA General Conference,” 94 PR/33, September 19, 1994.

expertise acquired by Iraq's scientists and engineers could provide an adequate basis for reconstituting a nuclear weapons-based program." He added, "a continuing high-level of vigilance is therefore necessary."<sup>73</sup> Iraq, however, does not currently possess the necessary infrastructure to produce the fissile material for a nuclear weapon and would have to rely on foreign assistance for any post-UN sanction nuclear effort.

Prior to the 1991 Gulf War, Iraq had extensive ballistic missile capabilities. UNSCOM officials believe that Iraq's ballistic missile infrastructure was sophisticated. Under the terms of UNSCR 687, UNSCOM has destroyed Iraq's known ballistic missiles with ranges of greater than 150 km and has dismantled the associated missile infrastructure. A dispute continues, however, between UNSCOM and the United States over accounting for all of Iraq's missiles. The U.S. intelligence community believes that Iraq may have hidden up to a hundred missiles.

Due to the sanctions imposed against Iraq, and the intrusive nature of the UNSCOM inspections being conducted, it is difficult for Iraq to engage in WMD and ballistic missile technology exchange with other nations. Saddam Hussein seeks hegemony in the Middle East and would be unwilling to share his prized WMD or ballistic missile technology with neighboring rival states.

### **3. *Libya***

For nearly 25 years, Libya's leader, Colonel Muammar Khadafi, has sought to obtain nuclear arms and other weapons of mass destruction to advance his version of radical Arab

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<sup>73</sup> U.S. Department of Defense, OSD, *Proliferation: Threat and Response*, p. 31, citing Hans Blix.

nationalism.<sup>74</sup> Libya made its first overtures for nuclear arms to China in 1970, but was initially rebuffed. It was subsequently successful, however, in procuring a Soviet-supplied nuclear research reactor. Libya has made no secret of its anti-American sentiment and has openly declared its intent to threaten the U.S. homeland.<sup>75</sup>

Libya has achieved the most success in developing its chemical warfare capability. During the 1980s, it succeeded in producing up to 100 tons of blister and nerve agent at its Rabta facility, which was built with foreign assistance. After intense media attention was focused on the facility, it closed in 1990, although the Libyans announced its reopening in September 1995 as a "pharmaceutical" facility.<sup>76</sup> It is known to be capable of producing chemical agents. After the media attention at Rabta, Libya shifted its emphasis to construction of a suspected underground chemical warfare facility at Tarhunah. In response to international attention, Qadhafi has claimed that Tarhunah is part of the Great Man-Made River Project, a nationwide system of underground irrigation tunnels and pipes, allegedly designed to make the desert productive. Western analysts have speculated, however, that the Tarhunah underground facility may be an underground chemical plant, its tunnels designed for troop movement.<sup>77</sup> Qadhafi has not given up the goal of establishing his own offensive chemical weapons capability and Libya continues to pursue an independent production

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<sup>74</sup> Spector, McDonough, Medeiros, p. 141.

<sup>75</sup> Joseph, p. 2.

<sup>76</sup> U.S. Department of Defense, OSD, *Proliferation: Threat and Response*, p. 35.

<sup>77</sup> Beaver, "Irrigation Tool or Libya's Latest Military Intrigue?," p. 12.

capability for chemical weapons.<sup>78</sup> While Libya has had a BW program for many years, it is still in the research and development stages, primarily because Libya lacks an adequate scientific and technical base. The program also has been hampered in acquiring foreign equipment and technical expertise. Libya is attempting to develop an indigenous capability and may be able to produce laboratory quantities of agent, despite membership in the BWC.

After a 25-year effort to acquire or develop a nuclear weapon, Libya's nuclear program remains stuck in first gear. It has succeeded only in providing training to a number of students and technicians, and in establishing a nuclear research center, which includes a small nuclear research reactor under IAEA safeguards.<sup>79</sup> This facility, located at Tajura, was provided by the Soviet Union. Libya does not appear to pose a short- or medium-term nuclear threat to the United States, however, unconfirmed reports have been circulating since the early 1990s concerning Libya's attempts to purchase nuclear technology.<sup>80</sup> This suggests that Libya has not given up its nuclear ambitions, but may simply be waiting for the requisite technology to develop within a friendly Muslim state, such as Iran, or for a black-market nuclear transaction. Additionally, recent discussions between Libya and Russia indicate possible renewed Russian support for Libya's nuclear effort at Tajura, including refurbishment and long-term maintenance.<sup>81</sup>

Despite the UN-imposed embargo, Libya continues to seek ballistic missile equipment,

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<sup>78</sup> U.S. Department of Defense, OSD, *Proliferation: Threat and Response*, p. 36.

<sup>79</sup> Ibid, p. 35.

<sup>80</sup> Spector, McDonough, and Medeiros, p. 141.

<sup>81</sup> U.S. Department of Defense, OSD, *Proliferation: Threat and Response*, p. 35.

materials, and technology from a variety of sources in Europe, the former Soviet Union, and Asia. Libya has tried to acquire or develop long range missiles (greater than 1,000 kilometers), but it has made little progress in recent years. Throughout the late 1980s and early 1990s, Libya made several apparently unsuccessful attempts to purchase missiles from abroad, such as the *SS-23* and *SS-21* from the Soviet Union and the *DF-3A*, *M-9*, and *M-11* from China. In addition, Tripoli may be continuing to cooperate with North Korea on the purchase of the *Nodong-1* and, possibly, the long-range *Taepo-Dong* missile technology. These developments take on a heightened significance when one recalls that the U.S. forces have been attacked by ballistic missiles from Libya before: in 1986, Libya fired at least two Soviet-built *Scud-B* missiles at U.S. installations on the Italian island of Lampedusa.<sup>82</sup>

Libya does not presently pose a significant proliferation supply-side risk because it does not possess a very extensive WMD or ballistic missile arsenal. Libya has received some WMD and ballistic missile technology from Russian and, possibly, North Korean sources.

#### 4. *Syria*

Syria is a regional threat to U.S. security interests, but does not pose a direct threat to the continental United States. Syria is primarily concerned with regional issues such as retaining hegemony over Lebanon, territorial issues with Israel, and perpetuating the regime of President Asad. Syria does, however, possess some WMD capability and, in this respect, is a proliferation risk.

Syria has a long-standing chemical warfare program, first developed in the 1970s. Syria has a stockpile of the nerve agent sarin and may be trying to develop advanced nerve

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<sup>82</sup> Carus, p. 53.



agents. Syria will likely try to improve the infrastructure for producing and storing chemical agents. Presently, it is believed to have weaponized sarin into *Scud* missile warheads.<sup>83</sup> Additionally, it has been reported that Syria will begin producing chemical bomblets for its *Scud* "C" missiles this year.<sup>84</sup> Syria is also pursuing the development of biological weapons. Syria probably has an adequate bio-technical infrastructure to support a small biological warfare program, but the Syrians are not believed to have begun any major weaponization or testing related to biological warfare.

Syria has not pursued development of nuclear weapons, and is not likely to do so in the near future due to financial and technical constraints. Syria, however, continues to be interested in nuclear technology. Syria has established a basic nuclear research capability, under the auspices of peaceful nuclear use; Syria has acquired a small, IAEA safeguarded research reactor from China. Due to its small fuel loading, low power level, and IAEA safeguards, it does not appear to represent a direct proliferation threat. Syria became an IAEA member state in 1963, ratified the NPT in 1969, and agreed to NPT-related IAEA safeguards in 1992.

Syria has received important supplies of *Scud*-related equipment and materials from North Korea, Iran, and Russia. Parallel with the production program for the liquid-propellant *Scud*, Syria, with foreign support, also has devoted significant resources to establishing a solid-propellant rocket motor development and production capability.<sup>85</sup> Syria is said to be

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<sup>83</sup> U.S. Department of Defense, OSD, *Proliferation: Threat and Response*, p. 38.

<sup>84</sup> Beaver, "Syria to Make Chemical Bomblets for 'Scud Cs'," citing officials from the BMDO.

<sup>85</sup> U.S. Department of Defense, OSD, *Proliferation: Threat and Response*, p. 40.

close to completing a new underground missile production facility, modified with Russian assistance, to build *Scuds* from “completely knocked-down kits.”<sup>86</sup> Syria also has underground facilities at Aleppo and Hama, built with the aid of technicians from China, Iran, and North Korea. Combined with foreign support in other technical areas, Syria is laying the groundwork for a solid-propellant SRBM.

Syria has traditionally been on the receiving end of WMD and ballistic missile technology, mainly from Russia, Iran, and North Korea. Most of Syria’s WMD and ballistic missile capabilities have been on the low-end of the proliferation scale, but their desire to obtain such technology persists.

#### **D. FORMER SOVIET REPUBLICS**

The Russian Federation has inherited the vast bulk of the Soviet strategic nuclear arsenal. The tensions between Russia and the United States have eased considerably since the Cold War, but the substantive strategic situation has not: both nations still possess enough strategic nuclear missiles to obliterate the other, but neither has the ballistic missile defenses needed to repel a nuclear missile strike. Additionally, the break-up of the Soviet empire let loose a wave of WMD and ballistic missile technology proliferation from several newly independent states.

##### ***1. Russia***

Despite the fact that drastic U.S.-Russian arms reductions have occurred under the auspices of the Strategic Arms Reduction Treaties I (START I and II) and the Nunn-Lugar

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<sup>86</sup> Beaver, “Syria to Make Chemical Bomblets for Scud Cs’.”

Cooperative Threat Reduction Act, the substantive nuclear situation between the United States and Russia continues to be based on deterrence. Both nations still have enough nuclear-armed missiles at their disposal to obliterate the other. Even though both sides claim to have “de-targeted” each other, “re-targeting” requires merely a few minutes of button-pushing. Russia is the preeminent successor state to the Soviet Union and remains in control of one of the world’s largest nuclear and ballistic missile forces.

In November 1997, the State Duma of the Russian Federation voted in favor of the ratification of the CWC.<sup>87</sup> Moscow has the world’s largest declared stockpile of chemical agents: 40,000 metric tons of chemical agent, which must be destroyed within a 10 year time-frame according to CWC rules.<sup>88</sup> U.S. estimates of the Russian CW stockpile are generally larger. The inventory includes a wide variety of weaponized nerve and blister agents in weapons and some stored in bulk. Russian officials do not deny that chemical R&D has continued, but assert that it is for developing defenses against chemical weapons, a purpose that is not banned by the CWC.<sup>89</sup> The outlook for timely Russian elimination of its chemical warfare stockpile is unclear despite President Yeltsin’s signing of a Russian federal law on the destruction of chemical weapons in 1997. Key components of the Soviet BW program remain largely intact and may support a possible future mobilization capability for the production of BW agents and delivery systems. Moreover, work outside the scope of legitimate biological defense activity may be occurring at selected facilities within Russia.

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<sup>87</sup> Thalif Deen, “Russian Breakthrough on Chemical Warfare.”

<sup>88</sup> Ibid.

<sup>89</sup> U.S. Department of Defense, OSD, *Proliferation: Threat and Response*, p. 44.

Such activity, if offensive in nature, would contravene the BWC of 1972, to which the Soviet government was a signatory. It would also contradict statements by top Russian political leaders that offensive activity has ceased.

As of January 1997, the stockpile of Russian strategic and tactical nuclear warheads was estimated at 25,000 warheads, a reduction of more than 5,000 warheads since a major elimination program began in 1992.<sup>90</sup> This gradual reduction took place as a result of tactical nuclear warhead reduction initiatives and bilateral agreements involving strategic warheads.

In addition to a plentiful supply of short range ballistic missiles, Russia retains a significant missile force of 1,200 operational ICBM and SLBM launchers. Included in this arsenal are the SS-18 "Satan," SS-19 "Stiletto," SS-24 "Scalpel," and SS-25 "Sickle" ICBMs, and the SS-N-8 "Sawfly," SS-N-18 "Stingray," SS-N-20 "Sturgeon," and SS-N-23 "Skiff" SLBMs. Russia is developing two new land-based ballistic missiles: the mobile 400 km, single-warhead SS-26 (officially unnamed, but nicknamed "son of *Scud*"), and a mobile ICBM, the SS-27 (*Topol-M*), which is expected to achieve initial operating capability in mid-1998.<sup>91</sup> *Jane's Strategic Weapon Systems* describes some additional features of the *Topol-M*:

Russian accounts have stressed the invulnerability of the new missile to anti-ballistic missile defences, and it has been suggested that the missile may have a more energetic first-stage engine and that the system incorporates a new warhead and re-entry vehicle with reduced vulnerability to interceptors. Russian reports suggest that previous Russian warheads could be rendered ineffective by nuclear blasts up to 10 km away, while the new systems can withstand explosions closer than

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<sup>90</sup> U.S. Department of Defense, OSD, *Proliferation: Threat and Response*, p. 43.

<sup>91</sup> Lennox, (ed.), *Jane's Strategic Weapon Systems*, JSWS-Issue 25 (SS-X-26 and SS-X-27). See also, Barbara Starr, "Russia's SS-27 May be Operational by Mid-'98."

500 m range. There are reports that the new *Topol-M* would be capable of carrying up to 10 warheads and is analogous to the U.S. LGM-118 *Peacekeeper*, but is believed to be compliant with the Strategic Arms Reduction Treaty 1 and 2 (START 1 and 2) with a single warhead only.<sup>92</sup>

Russia is also developing a next-generation SLBM, which is probably within the limits of existing arms control treaties.<sup>93</sup> As is evident from their ongoing production plans, Russia's industrial base can support production of the full range of both solid and liquid-propellant ballistic missiles and all associated technologies.

Russia has come under heavy fire in recent months for alleged transfers of WMD and ballistic missile-related technologies to rogue states. Russia has engaged in providing technical assistance, personnel training, and nuclear facility construction to Iran. Additionally, Russia also has a contract to sell a nuclear reactor to India, and has been implicated in aiding the missile programs in China, the Middle East, and South Asia.<sup>94</sup>

## **2. *Belarus, Ukraine, and Kazakhstan***

The newly independent states of Belarus, Ukraine, and Kazakhstan have received some of the Soviet Union's WMD and ballistic missile assets. It is not believed, however, that any of the three countries have retained a militarized chemical weapons program, although much of the Soviet CW infrastructure remains in place in a de-militarized form. Belarus reportedly has no BW program and no intention of embarking on one. Ukraine and Kazakhstan have both retained former Soviet BW facilities, but none are reportedly active

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<sup>92</sup> Lennox, (ed.), *Jane's Strategic Weapon Systems*, JSWS-Issue 25 (SS-X-27).

<sup>93</sup> U.S. Department of Defense, OSD, *Proliferation: Threat and Response*, p. 46.

<sup>94</sup> *Ibid*, p. 48.

now. The current governments of both countries reportedly have no known plans to re-establish BW programs. After years of arms reduction and denuclearizing efforts, Ukraine, Belarus, and Kazakhstan have been declared nuclear weapons-free. All three countries retain civilian nuclear reactor facilities. Ukraine, Belarus, and Kazakhstan may have all been declared nuclear weapons-free by the United States, but all three nations still possess varying quantities of Scud and SS-21 SRBMs. No operational ICBMs are believed to be deployed in any of the three countries, however, some intact ICBM airframes may still remain. Ukraine can still manufacture some of the guidance and control components used in current Russian ICBMs and SLBMs. Kazakhstan has the capability to produce ballistic missiles. Belarus has no indigenous capability to produce complete missile systems.<sup>95</sup>

All three countries present proliferation concerns. Most of this concern since 1991 has surrounded the issue of "loose-nukes." There have been numerous reports of weapons-grade fissile material seeping out of the former Soviet Union. Kazakhstan has become a source of concern for two reasons: it was in possession of considerable stockpiles of nuclear weapons and fissile material when the Soviet Union crumbled, and it has friendly ties with Iran. Ukraine has had conventional arms dealings with Syria, but no evidence, as yet, has surfaced that Ukraine has exported WMD or ballistic missile-related technology to Syria. It has been reported, however, that Ukraine entered into contract with Iran to provide turbines for a nuclear power plant at Bushehr, on the Gulf coast, but bowed to U.S. pressure to scrap the contract.<sup>96</sup> The plant at Bushehr is being completed by Russia under a \$800 million

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<sup>95</sup> U.S. Department of Defense, OSD, *Proliferation: Threat and Response*, p. 47.

<sup>96</sup> Ed Blanche, "Belarus Offers Military Help for Syria and Iran."

agreement. A watchful eye still needs to be cast over the actions of these three newly independent nations, since the potential for proliferation to rogue states remains high.

## **E. IMPLICATIONS**

The nations described in this chapter represent only the most troubling and threatening proliferators facing the United States. This survey demonstrates an alarming trend in both the spread of WMD technology and the ranges of ballistic missiles available to nations which harbor anti-American sentiment. Russia and China present high-end threats due to the inherent size and capability of their respective arsenals. Aside from outright attack, a more likely threat is in the form of unauthorized or accidental launch from one of these two major powers. Grouped behind Russia and China are second tier threat, such as North Korea, Iran, and India. These are developing nations which are well-along on the path of WMD and ballistic missile proliferation. The developing ballistic missile capabilities of these three nations threaten to undercut the conclusion reached by the U.S. Intelligence Community in NIE 95-19 *Emerging Missile Threats to North America During the Next 15 Year, November 1995*, that no nation, other than the declared nuclear powers, will procure an ICBM capable of reaching the United States within the next 15 years. The greatest threats from the developing world seems to emanate from North Korea and Iran. Both of these nations have very aggressive WMD and ballistic missile programs, in that much of North Korea's ballistic missile advances ultimately wind up in Iranian hands. North Korea's current missile developments jeopardize the states of Hawaii and Alaska, and possibly part of the West coast of the United States. Should North Korea agree to transfer its most advanced ballistic missile

technology to Libya, then the eastern seaboard of the United States also could be threatened. Additionally, there are troubling trends among proliferators: (1) the growth of WMD/ballistic missile R&D; (2) modern production and launch facilities; and (3) construction of deep-underground facilities. The nature of the threat is the primary factor driving the United States towards ballistic missile defense. The next chapter will discern how the threat perception and other key factors drive each of the four potential paths to NMD. A determination will then be made as to which path the United States appears to be on.





### III. PATHS TO NMD DEPLOYMENT

What are the key factors that shape the four proposed NMD deployment paths? The nature of the threat is *the* driving factor in the recent push for NMD. There are, however, other factors which figure into the NMD deployment decision-making process. Identifying which factors drive NMD deployment decisions, at a particular juncture in time, can help to discern which path the United States is currently on towards NMD deployment. The Clinton administration's "3+3" deployment readiness plan is the current declaratory policy on NMD deployment. The "3+3" approach, however, is a deployment *readiness* plan, and no commitment to *actual* deployment has been made. An actual commitment to NMD deployment on the part of the Clinton administration is by no means assured.

Plans for NMD deployment have changed with each new presidential administration: just before President Clinton was elected in 1992, President Bush proposed a Global Protection System (GPS) in cooperation with the Russians. Seven years before President Bush's proposal, President Reagan was touting the large-scale Strategic Defense Initiative (SDI). In the decades prior to SDI, the Nixon, Johnson, and Kennedy administrations all had their own varied plans for a national ABM system. The net result of this activity has been a host of wide-ranging, short-term proposals for NMD, but no system deployment. It is reasonable to expect that plans for NMD deployment will change again after President Clinton is succeeded in office. In fact, the Clinton administration's "3+3" deployment readiness program would seem to be more of a temporary political concession to appease an extremely

vocal pro-NMD Republican Congress, rather than a commitment to NMD.<sup>1</sup> It would be prudent not to put too much stock in the Clinton administration's stated NMD deployment readiness plan. Instead, the key drivers underlying the NMD debate might offer a more accurate indicator of which path the United States is taking towards NMD deployment.

#### A. DISCERNING THE FACTORS

The threat confronting the United States has been *the* driving factor in all national missile defense debates. The nature of the threat has changed over time. Other factors also affect the NMD deployment decision-making process. Critical factors have been identified for the four paths to NMD deployment: (1) joint military service support; (2) Republican Congress support; (3) Republican President support; (4) Democratic Congress support; (5) Democratic President support; (6) corporate defense contractor support; (7) arms control lobby support; (8) WMD/ballistic missile threat perception (regional/theater); (9) WMD/Ballistic missile threat perception (intercontinental/national); (10) NMD system technological feasibility; (11) likely overall NMD system reliability; (12) capability of the Planning, Programming, and Budgeting System (PPBS) to support NMD deployment plans; and (13) flexibility in international cooperation and technology sharing. Over the life of the missile defense debate, these factors have repeatedly emerged as critical drivers that have

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<sup>1</sup> Former Secretary of State Caspar W. Weinberger has pointed out that the Clinton administration has never really been in favor of NMD. Decrying the Senate Armed Services Committee's 1995 compromise vote in favor of establishing a new strategic multi-site NMD system as "a clever lawyer's attempt to make people believe we will have a real missile defense, when, in fact, all the teeth of such a defense have been pulled," Weinberger went on to say that such compromises "let the President (Clinton) claim he is for missile defense when clearly he is not." Caspar W. Weinberger, "Beware of Bipartisan Compromise," *Forbes*.

swayed past missile defense decisions.

### **1.     *Joint Service Support***

The factor "Joint Service Support" reflects the current movement within the U.S. military for *jointness* resulting from the requirements of the Goldwater-Nichols Act. Prior to the era of jointness, the military service chiefs could be counted on to be solid missile defense advocates. This is generally true today, but the Joint Chiefs are much more "politically correct" than they were back in the 1960s when they went toe-to-toe with Secretary of Defense Robert McNamara over *Sentinel* and *Safeguard*. The "Joint Service support" factor in the chart will reflect how the Joint Staff has responded, or would be likely to respond, to each particular scenario. The Joint Staff is known to be in favor of certain paths, opposed to others, and silent on the controversial ones. No matter what position the Joint Staff may advocate, they are required by law to carry out the decisions of the elected civilian leadership of the Nation. Therefore, the official position of the Joint Staff on a particular NMD path may be determined largely by the President's official position. There are indications, however, that some service warfare commanders may not necessarily be in total agreement with the current official position of the Joint Staff on the subject of NMD and the ABM Treaty.

### **2.     *Republican Congress Support***

Republican lawmakers in Congress have been in favor of some type of national ballistic missile defense system. The Republican party has been one of the consistent driving forces keeping the NMD-ABM Treaty debate alive since 1972. A Republican Congress would be supportive of any initiative that might ultimately yield a NMD system, and,

conversely, against any proposal which might strengthen the ABM Treaty regime.

### 3. *Republican President Support*

Republican Presidents have been pro-NMD. The Bush administration supported the 1991 Global Protection Against Limited Strikes (GPALS) and the 1992 U.S.-Russian Global Protection System (GPS) proposals, and the Reagan administration proposed the SDI. Even the Nixon administration, which negotiated and signed the ABM Treaty, was also pro-NMD.<sup>2</sup> Nixon only agreed to sign the ABM Treaty after he was shown analysis that suggested that an ABM system of that era could not achieve a sufficient enough kill percentage against Soviet ICBMs to prevent “unacceptable damage” to the United States.

### 4. *Democratic Congress Support*

Democrats in Congress have varied in their views on ABM system proposals. Prior to 1969, bipartisan Congressional support for a national ABM system existed. The ABM debate of the 1960s was marked by bitter battles between the leading “mutual assured destruction” advocate, Secretary of Defense Robert McNamara, and bipartisan Congressional lawmakers and the military establishment. After the signing of the ABM Treaty, however, most Democratic lawmakers became attached to the ABM Treaty as an instrument of *detente*. Since then, Democratic lawmakers who have had constituencies back home with an interest in NMD, such as shipbuilders and aerospace contractors, generally have been the only Democrats who have advocated a national ABM system alongside Republicans. More recently, Democrats representing the state of Hawaii have voted in favor of NMD legislation

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<sup>2</sup> On 14 March 1969, President Nixon announced his new ABM plan for the United States: the *Safeguard* system. This system consisted of the former *Sentinel* system equipment deployed in a different configuration which protected ICBM silo fields vice U.S. population centers.

in direct response to the threat posed to Hawaii by the increased range and lethality of the North Korean *Taepo Dong* ballistic missile series.<sup>3</sup> Otherwise, Democratic lawmakers have been overwhelmingly supportive of the ABM Treaty regime.

#### **5. *Democratic President Support***

The positions of Democratic Presidents have been similar to their Congressional counterparts. Presidents Kennedy and Johnson, both Democrats, were among the earliest supporters of a national ABM system. Since the signing of the ABM Treaty, however, both Democratic Presidents, Carter and Clinton, have been pro-ABM Treaty and anti-NMD. It seems unlikely that this trend will change in the foreseeable future.

#### **6. *Defense Contractor Support***

The U.S. military-industrial complex has always had an enormous stake in the outcome of the NMD-ABM Treaty debate.<sup>4</sup> U.S. defense contractors having an interest in NMD have always been supportive of finding ways around the ABM Treaty in order to deploy a national ABM system. Collectively, they possess a powerful voice in the NMD-ABM Treaty debate and wield strong influence over political decisions on the issue.

#### **7. *Arms Control Lobby Support***

As much as the defense contractors have supported NMD, the arms control lobby has opposed it. The arms control lobbyists can be counted on to oppose any NMD proposal and

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<sup>3</sup> The U.S. Senate Roll call Vote of the 105<sup>th</sup> Congress, 2<sup>nd</sup> Session on the "American Missile Protection Act of 1998," 13 May 1998, reflects that both Democratic senators representing the state of Hawaii, Senators Akaka and Inouye, voted in favor of the proposed legislation. A total of four Democratic senators voted in favor of the failed legislation. Both of Alaska's Senators are Republicans who, of course, also voted for the legislation.

<sup>4</sup> See Appendix E for a list of the top BMD contractors.

to support any initiative which maintains the ABM Treaty as “the cornerstone of strategic stability.” The arms control lobby also wields strong influence over the political establishment, particularly over liberal Democrats who support to the ABM Treaty.

#### **8. *Threat Perception (regional)***

When discussing the WMD and ballistic missile threat, it is necessary to discern between short and medium range (regional) and long range (intercontinental) threats, since the nature of each threat can drive missile defense decisions in very different directions. In recent years, a strong regional threat has driven nations, such as Russia, Israel, and NATO allies, to seek political and technological cooperation with the United States to develop joint missile defense programs. These regional threats may be perceived as pressing to U.S. allies, but they are not necessarily perceived as threatening to the immediate security of the continental United States. An exclusively regional threat may not be sufficient to motivate American public sentiment or political support towards NMD, but its immediacy makes it sufficient to motivate U.S. allies.

#### **9. *Threat Perception (intercontinental)***

An intercontinental WMD threat, however, presents an entirely different strategic situation for the United States than an exclusively regional one. A shift in the American public’s perception of the ICBM threat from low to high may redirect America’s attention away from domestic complacency and towards the need for NMD. For Americans, rightly or wrongly, an ICBM threat is seen as an “over here” threat, while a regional threat is seen as “over there” and not “our problem.”

## **10. Technological Feasibility**

A basic consideration is whether or not a given path to NMD is technologically feasible. It would seem that those paths which would require rapid system deployment may not be technologically possible in the near term. Several missile defense systems, most notably THAAD, have encountered significant intercept difficulties. The Welch report noted that these failures were not due to technological limitations or the difficulty of the task, but rather to component design flaws.<sup>5</sup> Despite this, critics of NMD have used the ballistic missile interceptor test failures as evidence that ballistic missile defenses are not yet technological feasible. The lack of technological feasibility has killed past ABM system proposals. Therefore, this factor must be addressed for each NMD path.

## **11. Overall System Reliability**

Each of the different paths proposed will vary when it comes to the likely reliability of a deployed NMD system. A path which requires a rapid, "overnight" deployment of an NMD system will be far less reliable than a system which has had time to be well designed and thoroughly tested prior to fielding. In the Alternative Paths chart (Table 3.1), those paths which would allow for longer lead times in order to develop NMD system components are considered to be more reliable than those paths which would require swift system deployment.

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<sup>5</sup> A recent panel review headed by former Air Force chief of staff Gen. Larry Welch examined three missile defense programs - the Army's Theater High Altitude Area Defense (THAAD) and Patriot 3 (PAC-3), the Navy's Theater Wide System, and BMDO's efforts to develop a limited NMD system. The review was prompted by a series of setbacks, including 13 of 17 ABM interceptor test failures over the past decade. The Welch panel pointed out, however, that the unsuccessful tests were defeated not by the difficulty of the mission, but by minor problems with the hardware, many of which suggested simple carelessness in manufacturing test missiles. The THAAD tests, for instance, failed for such reasons as faulty programming of the autopilot computer in one case, and a contaminated electrical connection in another. *Report of the Panel on Reducing Risk in Ballistic Missile Defense Flight Test Programs*, 27 February 1998.



## **12. *Capability of the PPBS System to Support***

A key question for any major defense project is whether or not its required deployment schedule is supported by the amount of time it takes the PPBS to program, plan, budget, and build it. The PPBS has a great deal of flexibility built into it which allows for periodic reevaluation of defense systems in order to review specific mission requirements. A NMD system which is required to be deployed on short notice, may not be feasible given the inherent time constraints of the system procurement process. Additionally, there are even more significant time constraints on a "quick-fix" NMD system deployment schedule. Training, doctrine, and cultural acceptance to the new NMD roles and missions would also have to be developed. The realization of these aspects of new defense systems historically have been challenging and time-consuming. Conversely, a NMD system deployment path which permits considerable lead time is more amenable to the PPBS and the Deliberate Planning process within the Joint Strategic Capabilities Plan (JSCP) framework.

## **13. *Amenable to International Cooperation***

The success of certain NMD deployment paths may hinge on whether or not it is amenable to international cooperation and technology sharing. If the United States were to pursue a U.S.-Russia cooperative ABM Treaty amendment path, it seems that it would be considerably easier for the United States to approach Russia with an ABM Treaty amendment proposal if other friendly and allied nations also had a stake in the decision. If Russia *and* other allies had a stake in a cooperative ABM system venture, then so much the better. It is useful to identify whether or not a particular path is amenable to international cooperation. When it comes to approaching the Russians on the issue of amending the ABM Treaty, the

United States may find that there is political strength in numbers.

The following section will deal with how the factors apply to each of the four discernable paths to NMD. The Alternative Paths chart contained in Table 3.1 is provided as a useful framework for structuring the relationship between each of the four paths and the factors described above. After the factors have been applied to each of the four paths, a determination will be made as to which of the four paths seems to reflect the true path the United States is on towards NMD deployment.

## **B. APPLYING THE FACTORS**

The factors surrounding the NMD decision-making process have changed little over time: the arms control lobby is still against missile defenses; the Republican party is still supportive of the NMD concept; and the Democratic party still supports the ABM Treaty. The relationships between the factors and each of the four scenarios is represented by the chart contained in Table 3.1. Those factors which drive a particular scenario positively are indicated in the chart by a "check mark." Those factors which appear to work against, or which do not affect, a particular path are left blank. If a particular factor is "not applicable" to a given path, then an "N/A" is indicated under that path. Those factors which appear to be present in today's NMD debate are shaded blue. The chart frames the current, multi-faceted, and often confusing NMD debate into four distinct paths which can be identified by certain factor factors. By matching current trends and events within the NMD debate to the factors contained in the chart, one can gain a clearer picture of precisely where the United

<b>PATHS</b> <b>FACTORS</b>	ABM Treaty Withdrawal	Cooperate With the Russians	"Muddle- through"	ABM Treaty Erosion
Joint Service support		✓	✓	✓
Republican Congress support	✓	✓		✓
Republican President support	✓	✓		✓
Democratic Congress support			✓	✓
Democratic President support			✓	
Defense contractor support	✓	✓		✓
Arms Control Lobby support			✓	
Threat Perception (regional)		✓	✓	✓
Threat Perception (intercontinental)	✓	✓		
Technological feasibility		✓	N/A	✓
Overall system reliability		✓	N/A	✓
PPBS system workable?		✓	N/A	✓
International cooperation		✓	N/A	✓

**Table 3.1. Factors Driving Alternative Paths to NMD.** Factors which drive a particular scenario are indicated in the chart by a "check mark." Factors which appear to work against, or which do not affect, a particular path are left blank. Factors which are "not applicable" to a given path are indicated by "N/A." Factors which appear to be present in today's NMD debate are shaded blue.

States stands with regard to the ABM Treaty and NMD deployment.

### *1. ABM Treaty Withdrawal*

The ABM Treaty withdrawal option probably is the least likely path to NMD deployment. In today's era of multi-lateralism, the ABM Treaty withdrawal option has garnered relatively little support.<sup>6</sup> None of the military services have come out in favor of such an option; the military service chiefs have been silent on the issue of Treaty withdrawal. Prominent members of the Republican party have, however, been extremely vocal in advocating ABM Treaty withdrawal. If a Republican president were in office, then there probably would also be Executive support for the ABM Treaty withdrawal path. On the other side of the political spectrum, prominent leaders of the Democratic party have come out in favor of maintaining, if not strengthening the ABM Treaty regime. Even though there are a handful of Congressional Democrats who support the NMD concept in principle, Democrat-controlled Congresses since 1972 have historically been overwhelmingly anti-NMD and pro-ABM Treaty. The same holds true for Democratic presidents since 1972. The Republicans and Democrats have been at odds with one another for years over the NMD-ABM Treaty issue, never managing to achieve a lasting consensus on the issue.

In order for Treaty withdrawal to have a realistic prospect for success, at least one of two events would have to occur: the Republicans would have to be in control of both Congress and the White House, or an actual intercontinental ballistic missile strike, or some other grave assault on American security, would have occur against the United States. It is

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<sup>6</sup> The Clinton administration's approach has been to multi-lateralize what was designed to be a bi-lateral ABM Treaty, during the Standing Consultative Commission of 26 September 1997, by allowing Russia, Kazakhstan, Ukraine, and Belarus to take the place of the Soviet Union as Treaty partners.

doubtful that anything less would generate the requisite public and political support to make such a momentous decision.<sup>7</sup> An actual missile strike against the continental United States is usually considered to be a “wild card” event. In the case of a wild card event, trends can become upset almost overnight. Wild card events are not considered in this analysis, and are not addressed by the chart, because they are not very useful in determining which path the United States is *currently* on towards NMD. The ABM Treaty withdrawal path would also find support among major American defense contractors, since they would realize an immediate and long-term windfall of NMD-related defense contracts resulting from a decision to deploy a national ABM system. Additionally, advanced research and development work in the field of missile defense would lead to spin-off technologies with applications in the civilian market.<sup>8</sup> The arms control lobby has traditionally been averse to amending of the ABM Treaty, let alone withdrawing outright from it.

The type of threat perception which would characterize a Treaty withdrawal scenario would be exclusively intercontinental in nature. A regional threat, except in the unlikely case it should emanate from within the Western hemisphere (i.e., Cuba), would not generate enough popular impetus within the United States to move politicians to reach a consensus on

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<sup>7</sup> As Pat Towell has noted in “Picking the Best Missile Defense: Cold War Treaty or New Weapons,” GOP efforts at NMD have been bogged down by public apathy over defense in general, and missile defense in particular. When former Senate Majority leader Bob Dole (R-KS) tried to launch the missile defense issue during his 1996 presidential campaign, it collapsed on the pad.

<sup>8</sup> According to BMDO, at least 40 companies have spun-off Federal laboratories, private companies, or universities to commercialize BMDO technology. Roughly 205 new commercial products have resulted from BMDO-funded technologies, and 12 companies funded by BMDO Small Business Innovative Research Program have gone public. Additionally, over 429 ventures and at least 440 patents have resulted from BMDO funding to date. (Internet source: “Ballistic Missile Defense Office (BMDO) Homepage,” “Technology Transfer and Dual-Use” section ([www.acq.mil/bmdo/html/transfer.html](http://www.acq.mil/bmdo/html/transfer.html)).

scrapping the ABM Treaty. An intercontinental threat, which is perceived by the American people to be immediate and real, would generate the required impetus to withdraw from the Treaty. Given the current state of NMD system testing, the overall system reliability of a quick-fix national ABM system would be extremely suspect.<sup>9</sup> It would not be possible to field a reliable system on such short notice. Additionally, a Treaty withdrawal approach would have significant implications for NMD system procurement through the PPBS system. Through the PPBS, defense system priorities could be shifted to NMD, since there are a plethora of NMD system components under "research" which could be shifted into "development." This would no doubt be a painful process, but would be achievable. Therefore, PPBS would not be a driver in the withdrawal scenario. The larger question concerns what existing or planned defense systems would lose funding in order to "plus-up" NMD funding. If the United States were to withdraw unilaterally from the ABM Treaty in the near term, then significant changes would have to be effected on existing or planned defense systems. In an era of shrinking defense budgets, certain defense systems would inevitably suffer at the expense of NMD. In order to fund a rapid deployment of a NMD system, the four military services would have to make tough decisions about which of their defense programs would have funding trimmed away in order to support a NMD system.

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<sup>9</sup> A recent panel review headed by former Air Force chief of staff Gen. Larry Welch examined three missile defense programs - the Army's Theater High Altitude Area Defense (THAAD) and Patriot 3 (PAC-3), the Navy's Theater Wide System, and BMDO's efforts to develop a limited NMD system. The review was prompted by a series of setbacks, including 13 of 17 ABM interceptor test failures over the past decade. The Welch panel pointed out, however, that the unsuccessful tests were defeated not by the difficulty of the mission, but by minor problems with the hardware, many of which suggested simple carelessness in manufacturing test missiles. The THAAD tests, for instance, failed for such reasons as faulty programming of the autopilot computer in one case, and a contaminated electrical connection in another. *Report of the Panel on Reducing Risk in Ballistic Missile Defense Flight Test Programs*, 27 February 1998.

Finally, a Treaty withdrawal scenario would be strictly unilateral in nature, with the United States acting alone to protect its vital interests and showing little interest in collaborative international efforts.

## 2. *Cooperation with the Russians*

The sharing of critical U.S. missile defense technology with America's former Cold War adversary is what a cooperative missile defense arrangement, such as the GPS, would entail. The cooperative overtures between the United States and Russia on GPS passed to history after the 1992 American presidential election. The GPS proposal was abandoned by the Clinton administration, which initially had no intention of fielding any type of national missile defense, and instead opted to negotiate "demarcation" rules with Russia to distinguish between systems classified as national (strategic), which are limited by the ABM Treaty, and theater (regional), which are not.<sup>10</sup> The vagueness of certain Treaty language in the original ABM Treaty text always has been recognized as its "Achilles heel," leaving the Treaty subject to possible erosion by new and "exotic" technologies.<sup>11</sup> A cooperative approach would enjoy

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<sup>10</sup> The negotiation of these demarcation rules are contained in the Standing Consultative Commission statements on the ABM Treaty, dated 26 September 1997. The Clinton administration presented these substantial demarcation agreements as "Agreed Statements" of the SCC, which do not require Senate approval, rather than as amendments to the ABM Treaty, which do require Senate approval. The Republican Congress had anticipated this development and sought to make such an agreement subject to Senate review. As a result, Section 232 of the National Defense Authorization Act of Fiscal Year 1995 (Public Law 103-337) states: "The United States shall not be bound by any international agreement entered into by the President that would substantively modify the ABM Treaty unless the agreement is entered pursuant to the treaty making powers of the President under the Constitution." Conservative think-tanks have been livid over the SCC Agreed Statements, holding that the Agreed Statements of September 1997 represent substantive changes to the nature of the ABM Treaty and should require Senate approval. See Baker Spring, "Clinton is Bypassing the Senate on the ABM Treaty" and "The Senate Should Block the White House's End Run on the ABM Treaty," The Heritage Foundation.

<sup>11</sup> "Exotic technologies" are generally understood to mean those technologies based on "other physical principles" than those that underlie the launchers, operation of ABM interceptor missiles, their associated launchers, or ABM radar; the phrase "other physical principles" is taken from Agreed

the support of a Republican Congress and President since the historical record supports that conclusion. The cooperative approach would not enjoy the support of the Democrats, either in Congress or the White House. The Clinton administration abandoned the cooperative approach after being elected to office in 1992. Any U.S.-Russia missile defense venture would entail a greater degree of technology "sharing" on the part of U.S. defense contractors *vis-a-vis* the Russian defense establishment, since American missile defense technology has overtaken the disintegrating Russian ABM systems already in place. Despite these potential challenges, U.S. defense contractors would gain access to new markets in Russia if a cooperative approach were taken. They would also be subject to competitive pressures from Russian defense contractors. U.S. defense contractors would be likely to support a cooperative venture, however, due to the immense financial gains such a vast missile defense system would promise. The arm control lobby, however, would not support a cooperative path; they were not supportive of the 1992 GPS proposal. They generally viewed the cooperative proposal as strategically destabilizing and against the spirit of the ABM Treaty. What initially drove Russia to seek a cooperative approach with the United States on GPS was the result of several factors which developed after the fall of the Soviet Union: (1) the proliferation of WMD and short-medium range ballistic missiles in nations along its periphery; (2) the disintegration of Russia's own early warning radar and ABM system; (3) the lack of advanced technology needed to upgrade their existing systems; (4) a lack of hard currency to develop state-of-the-art technology; and (5) the traditional view Russian view which holds

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Statement D of the ABM Treaty text (Lin p. 19). In 1988, Lin noted that the exotic technologies which have the greatest potential to erode the ABM Treaty are lasers, neutral particle beams, and electromagnetic rail guns (Lin p. 11-26). This still holds true today.



that missile defenses are peace-promoting and can enhance strategic stability.<sup>12</sup> From the Russian point of view, ballistic missiles were a clear and present danger because of their close geographic proximity to “regional” rogue missile threats. From the American point of view, the rogue ballistic missile threat was exclusively regional (“over there”), as opposed to intercontinental (“over here”), and was not viewed as an immediate and direct threat to the security of the continental United States.

As a result of the 1991 Gulf War experience, which saw Iraqi *Scud* missiles falling onto downtown Tel Aviv and Dahrain, and the WMD and ballistic missile proliferation challenge, American interest in developing ballistic missile defense systems increased significantly. It began to dawn on the American public that the possibility of an irrational actor, like Saddam Hussein, obtaining WMD-armed ICBMs, and actually using them, was real. During the same time period, it became apparent to the U.S. military and intelligence communities that the command and control structure of the Russian nuclear arsenal was deteriorating rapidly. This development forced the defense establishment to contemplate the very real possibility of an accidental or unauthorized Russian strategic launch. Therefore, both a regional threat perception and an intercontinental threat perception would characterize

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<sup>12</sup> The Soviet R&D program for BMD was authorized by Josef Stalin at the end of World War II as one of a series of strategic defense projects. The authorization was in response to several stimuli: the damage suffered by the USSR in World War II air raids, the British experience with V-1 and V-2 rockets, and the Soviet ICBM program. Soviet agreement to a treaty limiting the deployment of ABM launchers and the employment of radars in an ABM mode represented a sharp reversal in the Soviet strategic position. The Soviet position had always stressed the defensive and life-saving role of BMD, as opposed to the offensive and life-threatening role of offensive missiles. The Soviet commitment to strategic defense did not wane in the years after the signing of the ABM Treaty. See Jeffrey Richelson, “Ballistic Missile Defense and Soviet Strategy”, contained in Kolkowicz and Mickiewicz (eds.) *The Soviet Calculus of Nuclear War*, pgs. 70-77. Johan J. Holst noted that “the Russians adhered rather strenuously to the proposition that active defenses are, in fact, a peace-promoting value.” Holst, “Missile Defense, Soviet Union and Arms Race,” contained in Holst and Schneider (eds.) *Why ABM? Policy Issues in the Missile Defense Controversy*, p. 159.

a cooperative scenario; a regional threat would drive Russian or allied support, while an intercontinental one would drive American support. At least on the surface, the technological feasibility of a joint U.S.-Russia cooperative missile defense venture has looked promising. Russia has a history of developing and deploying dual-use anti-air/ABM systems from the 1960s through the 1980s. By the time the Soviet empire crumbled in 1991, most of that infrastructure had begun to disintegrate, but the ABM technological base that the Russian Federation inherited from the Soviet Union was in no way insignificant. At the very least, the technology bases and resources of the United States and Russia, once pooled together, would have promising potential to yield a successful joint ABM system. As far as the reliability of that system, one would expect that the United States and Russia would be able to develop a reliable ABM architecture. The U.S. has had notable successes, as well as failures, with its missile defense systems. The U.S. Army PATRIOT and U.S. Navy AEGIS-based missile defense systems represent missile defense success stories. Russian ABM systems are also generally considered to be reliable.<sup>13</sup> With the possible exception of Israel, no nations other than the United States and Russia have a better familiarity with the technology and issues surrounding missile defense. Since the cooperative approach, by its very nature, would entail a lengthy R&D and procurement time frame, it would lend itself more readily to the PPBS system than would the ABM Treaty withdrawal approach, for example, which would require

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<sup>13</sup> One of the main contenders in the worldwide competition to sell ballistic missile defense systems is the Russian Antey Corp.'s S-300V (SA-12A/B *Gladiator/Giant*). The interceptor has reportedly hit more than 60 ballistic and maneuvering missiles in tests. According to the Antey general designer, even a U.S. company has been a customer. Against ballistic missiles, the interceptor's single-shot kill probability is 0.4-0.7, and an average of 1.5-1.75 interceptors were fired to hit each target (See Michael Dornheim and Nikolay Novichkov, "Russian SA-12, SA-10 On World ATBM Market," *Aviation Week and Space Technology*).

a rapid procurement of missile defense system elements on very short notice.<sup>14</sup>

### 3. "Muddle-through"

The "muddle-through" path would perpetuate the status quo. Much of the decision-making along this path is politically driven, as opposed to threat driven. In many ways, the current "3+3" approach is a "muddle-through" approach. The Clinton administration has proposed "3+3" as a deployment readiness program designed to develop key missile defense technologies until an evaluation of the threat is made in the year 2000. If the nature of the threat, in the administration's view, warrants NMD deployment, then a decision will be made to deploy a very thin NMD system.<sup>15</sup> If the threat is not apparent, then deployment will be postponed. Those who follow the Clinton administration's past views on missile defense, observed its infatuation with the ABM Treaty regime, and noted how it has consistently attempted to cut the national missile defense budget cannot accept the "3+3" plan as genuine.<sup>16</sup> It seems to be an attempt to delay an NMD deployment decision until the

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<sup>14</sup> Article XV of the original ABM Treaty text requires six-months notice of intent to withdraw be provided to the other Treaty party. Following the Standing Consultative Committee (SCC) Agreed Statements of September 1997, there are now five parties to the ABM Treaty. Additionally, as Dr. Keith Payne, President of the National Institute for Public Policy, has put it, "the United States would probably require five to ten years or more to deploy an NMD, even if the decision to do so was made today." From transcript of the Carnegie International Endowment for International Peace roundtable *START II, Missile Non-Proliferation, and Missile Defense: Panel III*; "The Role of the ABM Treaty and National Missile Defense."

<sup>15</sup> The term "very thin" is used here to distinguish the proposed "3+3" system from what has been traditionally recognized as a "thin system." The traditional thin system is best exemplified by the proposed Sentinel (Johnson Administration) and Safeguard (Nixon Administration) systems of the 1960s. The traditional thin system was thought of in terms of 100s of interceptors, while the current "3+3" proposal speaks in terms of 10s of interceptors.

<sup>16</sup> As Henry Cooper, who ran the missile defense program for the Bush administration has warned, "the current infatuation with the ABM Treaty is costing money, time, and potentially lives." Pat Towell quoting Cooper in "Picking the Best Missile Defense: Cold War Treaty or New Weapons."

Administration can tighten the restrictions of the ABM Treaty through the Standing Consultative Commission.<sup>17</sup> The Joint military services have generally come out in favor of the "3+3" plan.<sup>18</sup> It would seem that the military services have accepted "3+3" as the genuine article. They seem to think that the Clinton administration is serious about the issue of NMD.<sup>19</sup> There do exist high ranking members of the U.S. military, however, who are not in favor of perpetuating the ABM Treaty regime, but who do not advocate outright Treaty withdrawal either. Since the official policy of the Joint Staff is to support "3+3", then the Joint services must be considered to be in favor of this path. The "muddle through" course of action, or maintaining the status quo, is only possible in an environment where the American public's perception of the WMD and ballistic missile threat to the American homeland is low. Most Americans do not monitor the ballistic missile capabilities of developing nations. If most Americans were aware that ballistic missile developments within a handful of anti-American nations were approaching the ICBM range, and that they are vulnerable to ballistic missile attack, then the push for a national missile defense might become

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<sup>17</sup> John Isaacs, President of the Council for the Livable World, has framed the concern over the Clinton administration's position on NMD this way, "The Right is afraid Clinton will spend \$4 billion a year and never deploy anything. The Left is afraid that he'll spend \$4 billion a year and deploy something - that the pressure to deploy will be irresistible." Pat Towell quoting Isaacs in "Picking the Best Missile Defense: Cold War Treaty or New Weapons."

<sup>18</sup> Gen. Hugh H. Shelton, USA, has come out in favor of the "3+3" approach, most notably in a strong letter to Sen. Carl Levin (D-MI) in support of the Clinton administration policy. See George C. Wilson, "Senate GOP Launches Bill to Force Clinton to Deploy Missile Defense," *Legi-Slate*, 21 April 1998.

<sup>19</sup> Rep. Curt Weldon (R-PA) took an interesting view on this topic when asked why the Pentagon does not focus more on the emerging threat as a driver in NMD, when he said, "their (the Pentagon's) ability to do so is somewhat limited because they only have to be politically correct, and that is, they have to only say what the White House and the partisan leadership in the Pentagon - the civilian leadership - wants them to say." From David Rupp, "Weldon Urges Theater Missile Defense Priority," an interview with Rep. Curt Weldon (R-PA) contained in *Defense Week*, 20 April 1998.

intense.<sup>20</sup> Since the object of the “muddle through” path is to maintain the ABM Treaty and the status quo (i.e., no NMD), then the “technological feasibility,” “system reliability,” “PPBS system favorability,” and “prospect for international cooperation factors” would not be applicable driving factors in this particular path; since no ABM system would ultimately be deployed.

#### 4. *Eroding the ABM Treaty*

The most likely threat to the ABM Treaty regime, short of Treaty withdrawal, has always been recognized as some form of erosion of the Treaty through technological advancement which would blur the specifics of an already ambiguous Treaty. The Joint military services, whether they realize it or not, support this trend. By pursuing top-flight theater ballistic missile defense technology, the military services are helping to break new technological ground which can have applicability to NMD. The Republicans also have been supportive of the Treaty erosion through technology approach. The Republican Congress has been pushing hard to increase incrementally funding for ballistic missile defense since the mid-1990s, and continues to do so despite enormous fiscal budgetary pressures to cut funding. The Democrats and arms control lobby have always recognized the threat to the ABM Treaty regime from new and “exotic” technologies, and both have been staunchly opposed to

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<sup>20</sup> In fact, most Americans are not even aware that on 30 March 1998 Congress passed the Iranian Missile Protection Act of 1997, which authorized increased funding for TMD systems by \$147 million. Additionally, similar legislation was added to the Senate’s emergency supplemental appropriations bill, which passed on 31 March 1998. Both pieces of legislation received surprisingly little media coverage. David Rupp, “Weldon Urges Theater Missile Defense Priority,” an interview with Rep. Curt Weldon (R-PA) in *Defense Week*, 20 April 1998. For complete text and legislative status of these and other defense-related legislation on the Internet, see “THOMAS: Legislative Information on the Internet” Internet source: [http://thomas.loc.gov/cgi-in/bdquery/L?d105:/list/bd/d105tp.1st:135\[135-147\]\(Defense\\_policy\)](http://thomas.loc.gov/cgi-in/bdquery/L?d105:/list/bd/d105tp.1st:135[135-147](Defense_policy))

anything which might violate the spirit of the ABM Treaty. The corporate defense contractors see dollar signs in the erosion approach.<sup>21</sup> These corporations will, in turn, lobby their local Congressional leaders to procure lucrative NMD contracts. Since some of these Congressional leaders being lobbied are Democrats, one finds a handful of Democratic lawmakers supporting the interests of their pro-NMD constituents back home. Additionally, a number of Democrats have voted in favor of legislation promoting theater ballistic missile defense systems which are helping to erode the ABM Treaty regime. The ABM Treaty erosion path is the only path where Congressional Democrats are noticeably fractured in their stance on missile defenses. Therefore, the Alternative Paths chart (Table 3.1) reflects that the Democratic Congress is helping to drive the erosion path. The very nature of the erosion approach makes it a slow and drawn-out process. Treaty erosion would be possible only in an environment where the ballistic missile threat is perceived to be mainly regional, since an intercontinental threat would generate too much pressure to produce a system quickly. A threat which is perceived as exclusively regional allows time for the requisite technology to develop and mature. The ABM Treaty erosion path needs time to develop the requisite technology to overcome the limitations of the Treaty. Other than the cooperative path, the Treaty erosion path would seem to be the most technologically feasible and reliable. Given the amount of time and R&D which would be invested in the erosion approach, one would expect it to develop a reliable system. Additionally, it would be a very favorable approach from the point of view of the PPBS system. The ABM Treaty erosion approach is characterized by long procurement time-frames, which are conducive to the PPBS system,

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<sup>21</sup> See Appendix E for a listing of the top contractors for Ballistic Missile Defense for 1997.

and incremental budget increases, which sustain and expand NMD system programs. The ABM Treaty erosion approach is also amenable to international cooperation, since cooperation on ABM systems between the United States and its allies performs two functions: (1) it allows other allied nations, which aren't under the constraints of the ABM Treaty, to develop and share "new and exotic" ABM technologies; and (2) it places multilateral pressure on Russia to permit, possibly even take part in, the erosion through technology process.

### **C. IDENTIFYING THE CURRENT NMD DEPLOYMENT PATH**

Where does the United States stand today? The current NMD-ABM Treaty debate is often confusing, with politicians putting forth a myriad of different proposals for an NMD system. There are also those politicians who would very much like to maintain the ABM Treaty regime and not deploy a NMD. Four distinct paths have been identified in this thesis to address the NMD and ABM Treaty debate. Each of the four scenarios has been framed by factors which have been key factors in past national ABM system debates. The objective now is to examine which factors appear to be at work in today's NMD debate and compare them to the four paths postulated in this thesis. In doing so, it should provide some insight into what path towards NMD the United States is on.

The ABM Treaty withdrawal option can be eliminated from the four paths. In the current and near term political environment, the ABM Treaty withdrawal path cannot gain the requisite public support or political consensus needed for it to succeed. The only way the ABM Treaty withdrawal option could be realized is if the Republican party could gain control

of both the Congress and the White House, or in the aftermath of a "wildcard" incident against the U.S. homeland. As it stands now, there is not nearly enough Democratic support in Congress to pass a resolution to withdraw from the ABM Treaty because the American public's perception of the threat is low. Since the fall of the Soviet Union, the ICBM threat perception has been low. China maintains an ICBM capability, but the American public is not accustomed to viewing the Chinese as adversarial. This trend, however, may be changing. Revelations that U.S. aerospace corporations have provided China with sensitive satellite-launching technology, which has ballistic missile applications, have recently come to the fore. The revelations have managed to attract the attention of the American public and *both* Parties of Congress, and all are concerned about the possible ramifications of this development. As it stands now, however, the threat perception of an ICBM attack on the American homeland is relatively low among most Americans. Additionally, it would be extremely challenging to develop an effective missile defense on short notice. The technological feasibility, system reliability, and PPBS advantage simply are not present with the Treaty withdrawal approach. There has been a string of ballistic missile defense interceptor test failures in recent months, most notably with the THAAD system which has yet to achieve an intercept in five attempts. If a decision were made to withdraw from the ABM Treaty in the near future, U.S. strategic ABM systems simply would not be ready.

The cooperative path with the Russians once held promise. The cooperative path may also be eliminated from the four potential paths today, mainly because of a lack of Democratic support from both Congress and the White House. In fact, the window of opportunity for cooperating with the Russians on NMD may have closed. Recent developments, such as



NATO expansion and accusations leveled against the Russians of providing WMD and long-range ballistic missile technologies to rogue states such as Iran, may have alienated the Russian government from reaching a compromise with the United States on missile defense. Since 1992, the Russian government also has sought to reaffirm its position as a great power. It is no longer as responsive to the desires of the United States as it was immediately after the fall of the Soviet empire. Additionally, Russia has become dependent on its strategic nuclear deterrent force to off-set the decay of its conventional military forces. Russia will be less inclined to cooperate with the United States on any amendments to the ABM Treaty which might place the effectiveness of its nuclear force, *vis-a-vis* the U.S. nuclear arsenal, in jeopardy. With START II ratification still held up in the Russian Duma, it is probable that the Russians will use America's NMD aspirations as leverage against START II ratification. Most of the other factors which drive this scenario are still in place as they were in 1992. The lack of American political will to support the GPS initiative has dealt a serious blow to the U.S.-Russia cooperative path.

It would seem that a case can be made for the "muddle through" scenario in the NMD debate. The number of factors which seem to be driving the muddle through path, however, are relatively few in number when compared to the ABM Treaty erosion path outlined in Table 3.1. The "muddle through" path has remained viable only because the Clinton administration has used its power and influence to generate support for it. Due to the number of factors found present in today's NMD debate which correspond directly to the ABM Treaty erosion path in Table 3.1, the current path to NMD appears to be through ABM Treaty erosion by new technology.

In today's NMD debate, the Joint services are unofficially supporting the ABM Treaty erosion path through the development of highly capable theater missile defense systems, some of which can have NMD applications. The Republican Congress is overwhelmingly in support of developing these new systems. The Democrats in Congress are somewhat mixed in their opinions on NMD. Those Congressional members who have constituencies which maintain a corporate interest in missile defense, or which are within range of rogue state ballistic missiles, have supported recent pro-NMD legislation. The Clinton administration has remained pro-ABM Treaty, as has the arms control lobby. U.S. defense contractors have been overwhelmingly supportive of NMD proposals. The American public today perceives the ballistic missile threat as a regional one, and that an ICBM threat to the continental United States is low. Since the Treaty erosion path has been going on for nearly a decade (since SDI began), long lead times fit within the time constraints of the PPBS.

The key factors affecting the four proposed NMD deployment paths each paint a different picture of how the United States might address the NMD-ABM Treaty challenge. The nature of the threat is *the* driving factor in the recent push for NMD. There are, however, other factors which figure into the NMD deployment decision-making process. The form which these factors currently take would seem to correspond most closely with the ABM Treaty erosion path, as outlined in Table 3.1.



#### IV. IMPLICATIONS

The United States is eroding the ABM Treaty regime by developing new technology. New missile defense systems are being tested which push the limits of technology into the range of the "new and exotic." There are several advanced "theater" ballistic missile defense systems, or system components, currently in the research and testing phase which, when deployed together, would provide the United States with a *de facto* NMD capability. Many of these proposed systems would bend, if not break, the current ground rules of the ABM Treaty regime. Procurement schedules have been laid out for many of these systems, and system deployment dates have been scheduled. It certainly appears that the Pentagon will procure these advanced missile defense systems and will follow through with their deployment on time.

##### A. TRANSLATING THEORY INTO REALITY

The 1972 ABM Treaty does not ban research into ABM systems. It does draw an ambiguous distinction between ABM system "research," which is permitted, and ABM system "development," which is banned. As the BMDO's *1997 Report to the Congress on Ballistic Missile Defense* has pointed out:

... the United States has traditionally distinguished "research" from "development" as outlined by then U.S. delegate Dr. Harold Brown in a 1971 statement to the Soviet SALT I delegation. Research includes, but is not limited to, concept design and laboratory testing. Development follows research and precedes full-scale testing of systems and components designed for actual deployment. Development of a weapon system is usually associated with the construction and field testing of one or more prototypes of

the system or its major components. The construction of a prototype, however, cannot necessarily be defined by national technical means of verification. In large part because of these verification difficulties, the ABM Treaty prohibition on the development of sea-based, air-based, space-based, and mobile land-based ABM systems, or components for such systems, applies when a prototype of such a system or its components enters the field testing stage.<sup>1</sup>

The Ballistic Missile Defense Organization (BMDO) has outlined four core programs which form the basis for the U.S. theater ballistic missile defense (TBMD) architecture: the PATRIOT Advanced Capability-3 (PAC-3), the Navy Area TBMD, the Theater High Altitude Area Defense (THAAD), and the Navy Theater Wide (NTW) systems. Three of these systems have been determined to be "ABM Treaty compliant." The Navy Theater Wide (Block II) system has not yet passed the ABM Treaty litmus test, and will not unless the Treaty is amended to allow for higher-speed interceptors. The prospects for that occurring have looked bleak during past negotiations with the Russians. The continued development of these systems, particularly the Navy Theater Wide system, in conjunction with other programs in the research and/or testing phase - the Space Based Laser, the Airborne Laser, the National Missile Defense Exoatmospheric Kill Vehicle, the Innovative Science and Technology Program, and the Advanced Sensors Technology program - push the technology envelope well into the range of the "new and exotic."

All field tests reasonably raising ABM Treaty compliance issues must be approved

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<sup>1</sup> U.S. Department of Defense, BMDO, *1997 Report to the Congress on Ballistic Missile Defense*, p. 6-1. Article XII of the ABM Treaty states that each Treaty Party should use national technical means to verify Treaty compliance by the other Party. This Article can be construed to mean that it is possible for development of ABM systems which cannot be verified as non-compliant by national technical means to take place.

through the DoD compliance review process. Systems that have theater and strategic defense applications, however, have been approved for field testing. Several of these systems, such as the Theater High Altitude Area Defense (THAAD) interceptor Program Definition/Risk Reduction (PD/RR) flight tests, the THAAD User Operational Evaluation System (UOES) System and Engineering and Manufacturing Development (EMD) Program (which includes interceptor and Theater Missile Defense-Ground Based Radar (TMD-GBR), the Space and Missile Tracking System (formerly Brilliant Eyes), and the National Missile Defense (NMD) Development Readiness Program Integrated Flight Tests 1-2 (involving Exoatmospheric Kill Vehicle (EKV) Sensor Flight Tests) are aspects of larger systems which push the technological envelope close to what the original ABM Treaty intended to prohibit. Whereas field testing of these individual system elements may have been determined to be "ABM Treaty compliant," the larger-scale system architecture to which they contribute may not be Treaty compliant. There are also systems under "research" which still remain to be deemed Treaty compliant: the Medium Air Defense System (MEADS); the Airborne Laser (ABL) Program; the Exoatmospheric Kill Vehicle (EKV) flight tests (FY 1998-2000); the Ground Based Radar Prototype (GBR-P) RTD Program; and the Long-Range Air Launch Target.<sup>2</sup>

The Navy Theater Wide missile defense system offers a high-performance defense weapon which approaches a sea-based NMD, but NTW Block II is not yet ABM Treaty compliant. The full Navy Theater Wide System may be the best example of a TMD program which has NMD implications. An AEGIS cruiser with Theater Wide capability, for example,

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<sup>2</sup> U.S. Department of Defense, BMDO, *1997 Report to the Congress on Ballistic Missile Defense*, p. 6-2.

optimally stationed in the Sea of Japan, can provide coverage for nearly all of Japan, essentially providing the Japanese with a *de facto* NMD capability. Combining the capabilities of several of these versatile warships at strategic locations off the United States, or from deployed locations overseas, could provide a similar strategic defense for the United States against a long-range ballistic missile threat. The Navy foresees such a system architecture, which would allow for multiple engagements of ballistic missiles targeted at the continental United States, first in the geographic region near the threat missile source and later, if necessary, a re-engagement of the threat missile over the Atlantic or Pacific Oceans. The high speed of the developmental Theater Wide Standard missile, the SM-3, should allow for intercepts up to 500 km high and 1,200 km away.<sup>3</sup> The missile is designed to operate at altitudes between 100,000 and 250,000 feet. LT Mark Rios, USN, authored a thesis study in 1993 which analyzed optimizing AEGIS ship stationing for TMD. He found that the exoatmospheric Navy Theater Wide (formerly Navy Upper-Tier) interceptor missile has an average velocity of 2000 km/sec, and has a single shot-probability of kill against a TBM of 0.75 ( $P_{ssk} = 0.75$ ).<sup>4</sup> When it comes to anti-air warfare (AAW), it is standard Navy practice to shoot a salvo of two missiles per target and evaluate the firing success after the predicted intercept to decide whether further firings are required for a confirmed kill. With this salvo doctrine, the Navy can expect kill probabilities of greater than 95%. Designers working on the "3+3" NMD system, expect similar numbers. Designers of the land-based NMD system

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<sup>3</sup> Michael A. Dornheim, "'Theater Wide' Missile Defense Appealing, Controversial, Difficult," *Aviation Week & Space Technology*, p. 59.

<sup>4</sup> LT Mark R. Rios, USN, *Optimizing AEGIS Ship Stationing for Active Theater Missile Defense*, p. 16.

expect roughly an 85% probability of kill from a single shot, so multiple shots would be used for a tighter shield. To obtain a 95% kill probability, NMD defense plans call for a "4 on 1" scheme - fire two interceptors at the target, then fire another two.<sup>5</sup> The Navy calls this "Shoot-Shoot, Look, Shoot-Shoot."

The key sticking point to the Navy Theater Wide system came during the Standing Consultative Commission (SCC) negotiations in the Fall of 1996. After negotiating a Phase One demarcation agreement permitting interceptor velocities up to 3 km/sec, the negotiations broke down in October 1996 when the Russians insisted on completing Phase Two demarcation agreements on high-speed interceptors before putting Phase One into force.<sup>6</sup> The Russians wanted Phase Two limits put in place on the development of more highly capable TMD systems like Navy Theater Wide.<sup>7</sup> Furthermore, the Russians have tied this issue to START II ratification and a prospective START III. The State Department has reported that Russian officials have stated that resolution of the demarcation issue is key to approval of START II.<sup>8</sup> John B. Rhineland, who wrote the initial draft of the ABM Treaty

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<sup>5</sup> Michael A. Dornheim, "Missile Defense Design Juggles Complex Factors," *Aviation Week & Space Technology*, p. 49.

<sup>6</sup> The Russians later came back to the bargaining table on February 13, 1997 and the SCC Agreed Statements of September 1997 were ultimately approved, with the United States winning that round by gaining approval to implement Phase One, as contained in Appendix C, while leaving Phase Two agreements to be negotiated at a later date.

<sup>7</sup> The agreed upon Phase One 3 km/sec interceptor speed limit for less-capable TMD systems would permit the United States to deploy THAAD, Navy Area Wide, and Navy Theater Wide (Block I) systems, but not the Navy Theater Wide (Block II) system, or an air-launched interceptor that could strike an enemy booster right after launch in a boost-phase intercept, such as the U.S. Air Force's Air-Borne Laser (ABL).

<sup>8</sup> Paul Mann, "ABM Treaty at 25: Relic or Rebirth?," *Aviation Week & Space Technology*, p. 48.



and served as legal advisor to the Nixon administration pointed out that, “the Russians will never agree to this high-velocity demarcation” for TMD system interceptors with speed above 3 km/sec, because it “effectively guts the ABM Treaty.”<sup>9</sup>

The Navy Theater Wide system enjoys tremendous support from Capitol Hill, which has lavished unrequested increases, often doubling funding, in each of the last four years. The total in add-ons alone is \$689 million, making the program one of the most financially favored defense projects.<sup>10</sup> Unlike most missile defense projects, the Theater Wide system also enjoys some bi-partisan support from key Republicans, like Rep. Curt Weldon (R-PA), and key Democrats, such as Rep. Owen Pickett (D-VA), the ranking member of the House research subcommittee. Much of the enthusiasm for the Theater Wide option also emanates from shipbuilding interest groups and aerospace defense contractors. Part of the enthusiasm also comes from those high-ranking advocates who espouse the Navy Theater Wide system as the ultimate answer to America’s NMD-ABM Treaty dilemma. “Much of the zeal for the Navy system arises precisely because the ABM Treaty bans sea-based NMD. To those whose goal is U.S. withdrawal from the ABM Treaty and unbridled missile defense, Treaty noncompliance is an asset.”<sup>11</sup> As Frank Gaffney, Director of the Center for Security Policy and supporter of the Theater Wide rapid deployment approach, has put it: “You have to be determined not to get something and determined to waste as much money as is humanly

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<sup>9</sup> Paul Mann, “ABM Treaty at 25: Relic or Rebirth?,” *Aviation Week & Space Technology*, p. 48, quoting John B. Rhinelander.

<sup>10</sup> Pat Towell, “Picking the Best Missile Defense: Cold War Treaty or New Weapons,” *Congressional Quarterly Weekly Report*.

<sup>11</sup> Ibid.

possible in order to do it that slowly. But that's not what's at work here: they are determined not to have a Navy-based theater-wide system because it is the inherent infrastructure for a Navy-based global missile defense system."<sup>12</sup> Gen. Lester Lyles, USAF, head of BMDO, has recently disclosed that the Navy has finally received approval of its secret operational requirements document for the Theater Wide system.<sup>13</sup>

## **B. FORCE STRUCTURE IMPLICATIONS?**

If the full Navy Theater Wide system is deployed, how might the ABM Treaty erosion through technology path affect future U.S. Navy force structure? Since the mid-1990s, articles and assessments have concluded that changes in the overall military force structure are both necessary and desirable. Two factors have largely driven this belief: (1) a concern that the Bottom-Up Review (BUR) force may not be affordable; and (2) indications that advanced technology offers greater military efficiency, particularly if it is combined with organizational changes which take advantage of those new technologies; the so-called Revolution in Military Affairs (RMA).<sup>14</sup> Additionally, new mission areas, such as strategic missile defense, appear to be on the horizon. Assuming that the Navy follows through with its plans for a sea-based strategic missile defense, what could this mean for U.S. Navy force structure?

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<sup>12</sup> Pat Towell, "Picking the Best Missile Defense: Cold War Treaty or New Weapons," *Congressional Quarterly Weekly Report*, quoting Frank Gaffney.

<sup>13</sup> Ibid.

<sup>14</sup> Hans Binnendijk (ed.), *1997 Strategic Assessment: Flash Points and Force Structure*, p. 21-2.

### 1. *The Mission Capability Package Concept*

Dr. David S. Alberts, Director of the Center for Advanced Concepts and Technology (ACT) of the Institute for National Strategic Studies (INSS), in his essay on a proposed Mission Capability Package (MCP) concept, put forth an intriguing idea which might be a good place to begin in thinking about future Navy force structure and a sea-based NMD component. Alberts proposes the MCP concept as “an extension of previous efforts initiated with the introduction of the PPBS system, continued by the Goldwater-Nichols Act, and most recently advanced by the expanded Joint Requirements Oversight Council (JROC) process, to build capabilities around a vision of how missions should be performed rather than an outmoded process based upon institutional artifacts.”<sup>15</sup> Alberts explains that MCPs:

... as end products of such a process, would contain concepts of operations, command and force structures, the corresponding doctrine, training and education, technology, and systems with a support infrastructure designed and tailored to accomplish specific missions. An integral part of the MCP concept is the approach proposed to synchronize the insertion of advanced technology with our ability to change the way we fight so that we are able to take advantage of the opportunities afforded by technology.<sup>16</sup>

Since any strategic missile defense architecture will be Joint, and will utilize the most advanced technologies possible, the Navy would do well to shape its strategic vision of a sea-based NMD component within a larger framework, such as the MCP concept. The Navy should do a mission-by-mission review, as part of a larger DoD review effort to determine what challenges lie beyond *Joint Vision 2010*, prioritize them, and design a force structure

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<sup>15</sup> David S. Alberts, “Mission Capability Packages,” *Strategic Forum*.

<sup>16</sup> Ibid.

to fit the "big picture." Given the lack of any adversary on the near-term strategic horizon which can credibly challenge the U. S. military in the conventional arena, and given the rapidly increasing range and lethality of ballistic missiles in the hands of rogue states, U.S. strategic missile defense will undoubtedly be somewhere near the top of that prioritized list. Such an approach will help drive R&D priorities, focus the technology insertion, and guide organizational and force planning, as well as doctrine development for a sea-based NMD system.

Currently, the introduction of TBMD capability in AEGIS ships is proceeding slowly, with the current plan having approximately 15 TBMD-capable AEGIS ships by 2003 and perhaps 25 ships by 2005. If an accelerated approach were taken, it might be possible to have a total of 44 TBMD capable ships by 2005.<sup>17</sup> A challenge to the overall plan is that TBMD capability is not forward fit into the current multi-ship DDG contract. If a planning process such as the MCP concept, or JROC, had been in place years ago, and the proliferation of ballistic missile technology had been foreseen, then TBMD could have been planned into the multi-ship DDG contract beforehand. Fortunately, the AEGIS platforms are flexible and capable enough to allow TBMD capability to be built into the existing platforms, and planned follow-on upgrades to a strategic capability can be subsequently built onto the Navy Area and Theater Wide missile defense architecture.

## **2. *Some Thoughts on Force Planning***

The actual deployment date of the Navy Theater Wide system, however, is receiving

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<sup>17</sup> U.S. Department of Defense. Theater Air Defense (TAD) Program Executive Office, "Navy Theater Ballistic Missile Defense Program: Comprehensive Review."

a tremendous push from the pro-NMD lobby and from the pro-NMD lawmakers on Capitol Hill. With current funding, the system is on course for deployment in fiscal year 2008. Senior Pentagon and Navy officials, however, have for the first time formally answered the question of how rapidly they can deploy the Navy Theater Wide system on AEGIS cruisers and destroyers. The answer, to be formally reported to Congress shortly, is that a first iteration of the system can be deployed by fiscal year 2005.<sup>18</sup> That estimate is longer than what some lawmakers, think-tank experts, contractors, and Navy officials have maintained. In the past, they have stated that, given sufficient funding, the developmental system could be fielded as soon as fiscal year 2002.

Once the Navy has taken the theater and strategic defense missions onboard, it will be impossible to shed them if they are later found to be incompatible with other naval missions. Therefore, future classes of Navy surface warships must be designed from the ground-up with a comprehensive, self-contained ballistic missile defense capability, just as they are currently designed with anti-air warfare (AAW), anti-surface warfare (ASUW), undersea warfare (USW), information warfare (IW), and strike warfare in mind. The Navy should plan its next class of surface warships, after the DD-21, with strategic missile defense capabilities built-in. The DD-21, the so-called "land attack destroyer," is seen as an answer to the Navy's need for naval gunfire support and power projection in the littoral battlespace in support of its vision for the 21<sup>st</sup> century Navy force structure. By the time these ships come into full production, however, the existing fleet of AEGIS cruisers will be rather long in the tooth, leaving only the AEGIS destroyers currently in production to fulfill the ballistic missile

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<sup>18</sup> John Donnelly, "Officials Seek to Speed Navy Missile Defenses to Fleet," *Defense Week*.

defense missions, as well as all of their other mission areas. In terms of sheer numbers, the number of AEGIS destroyers currently planned for production may not be enough to provide adequate coverage overseas and close to home from a rapidly growing ballistic missile threat. This suggests one of two things must take place: either more of the DDG-51 class of AEGIS destroyers must be funded, or plans for the ship class after the DD-21 must begin soon, as a replacement for the middle-aged AEGIS cruiser fleet.

Another force planning consideration must be how to address the missile interceptor load-out and reload challenge. An AEGIS cruiser has a maximum of 122 missile cells and an AEGIS destroyer has 90 cells, which can contain a mix of Vertical Launch Anti-Submarine Rockets (VLA), land-attack cruise missiles (Tomahawks), lower-tier AAW missiles (SM-2 Block IVA), and upper-tier strategic defense missiles (SM-3); none of which can be replenished at sea.<sup>19</sup> The missile capacities of individual ships do not have the room available to allow for an increased missile magazine size either, given the size requirements the various missiles; missiles which do not look to get smaller any time soon. An inport period, or mooring to a tending ship in very calm waters, must be scheduled to effect the replenishment of missiles to these ships. So what may turn out to be a highly successful ABM effort on Day One of a future conflict, may not be so on Day Two or Three, once the interceptor missiles have been expended and the ships are forced to leave station to be replenished. It seems likely that the ballistic missiles an adversary might launch on Day One or Two of a conflict could largely consist of "dummy" missiles with inert warheads, which would have the sole purpose

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<sup>19</sup> Combatant Commanders (CINCs) ultimately decide which "mix" of weapons will be loaded out on ships operating in the CINC's area of responsibility.

of depleting the on-station U.S. interceptor missile supply. Salvos of the "real" ballistic missiles could then be fired by the adversary at the continental United States, just as U.S. forces are scrambling to reload their interceptor missile stock. Current U.S. force planning for strategic missile defense is described in terms of a limited or accidental attack against the continental United States on the order of 10-20 incoming missiles. This particular vision seems more like wishful thinking, rather than a likely scenario. If recent history provides any clues, a missile attack from a rogue state is likely to be much more significant than 10-20 missiles. During the 1980-88 Iran-Iraq conflict, for example, over 1,000 ballistic missiles were launched by the two countries.<sup>20</sup> More than 1,000 Soviet-supplied Scuds were fired against the Afghan resistance in the late 1980s.<sup>21</sup> During the 1991 Gulf War, nearly 90 Iraqi ballistic missiles were launched against allied cities and military centers.<sup>22</sup> It would be prudent, therefore, to plan on defending against a larger scale ballistic missile attack from rogue states, on the order of perhaps 100-200 threat missiles, rather than the current 10-20 missile planning. This should especially be the case if one considers that a number of the initial incoming salvos might likely be "dummy" missiles designed to deplete U.S.

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<sup>20</sup> "Brief: Ballistic Missile Proliferation in the Developing World," in Arms Control and Disarmament Agency (ACDA), *World Military Expenditures and Arms Transfers-1988*, cited in Keith B. Payne, *Missile Defense in the 21<sup>st</sup> Century: Protection Against Limited Threats Including Lessons From the Gulf War*, p. 30.

<sup>21</sup> Director of Central Intelligence William H. Webster, cited in David Ottaway and Don Oberdorfer, "Administration Alters Assassination Ban," *Washington Post*, cited in Keith B. Payne, *Missile Defense in the 21<sup>st</sup> Century*, p. 30.

<sup>22</sup> Gen. Merrill Mc Peak, Chief of Staff of the Air Force, "The Air Campaign: Part of the Combined Arms Operation, Or The Mother of All Briefings," 15 March 1991, (briefing slides); quoted in Keith B. Payne, *Missile Defense in the 21<sup>st</sup> Century: Protection Against Limited Including From the Gulf War*, p. 31.

interceptors, and that the likely interceptor salvo doctrine for strategic missile defense will be four interceptor missiles for each incoming threat missile. With a "4 on 1" salvo doctrine, a 20 missile threat would require 80 interceptor missiles to counter it. In consideration of such challenges, network cuing to a platform like the proposed Arsenal Ship, with its capacity to carry approximately 500 missiles, might serve a crucial purpose not only in its previously envisioned power projection role, but also as a mobile, sea-based, survivable, strategic missile defense platform to complement the AEGIS platforms.

In short, there are much wider considerations which the Navy must take into account, aside from system capabilities and requirements, when it considers sea-based NMD. Indeed, this is true for all of the services as they address their own role in a NMD system; a system which will almost certainly be "Joint." It will take considerable lead time to fully develop a comprehensive NMD capability. Aside from the challenge of funding and deploying the physical components of a NMD system, a U.S. strategic defense capability must also develop comprehensive doctrine and training programs which will fit into the current (and future) joint mission requirements. Individual service missions and cultures must also become assimilated into this new "defensive" architecture, perhaps at the expense of traditional "warfighting" missions. Though this task is challenging, it must be addressed and overcome because ballistic missile defenses are urgently needed.





## V. CONCLUSION

This thesis has identified four distinct paths which could unfold as the United States attempts to address the limitations set against the deployment of a comprehensive U.S. NMD system by the 1972 ABM Treaty and its 1974 Protocol. Numerous factors can be identified which have shaped each of the four paths, but the one common factor in each case has been the nature of the threat. This threat has changed since the Cold War, but it still justifies development of a NMD system despite the conclusions of NIE 95-19, *Emerging Missile Threats to North America During the Next 15 Years*, November 1995.

In a sense, these factors can serve as signposts along the road to NMD decision-making. Correctly identifying which factors are driving NMD deployment decisions, at a particular juncture in time, can help one to discern which path the United States is currently on towards NMD deployment. The Clinton administration's "3+3" deployment readiness plan is the declaratory policy on NMD deployment, and many think that "3+3" is the path which the United States has taken to NMD deployment. The "3+3" approach, however, is a deployment *readiness* plan, and no commitment to *actual* deployment has been made. The drivers underlying the NMD debate would seem to offer a more accurate factor of which path the United States is actually on towards NMD deployment, rather than simply following the current political winds, wherever they may blow. Based on these factors, it would appear that the prospects for ABM Treaty withdrawal are not possible under the current political environment. There are also strong indications that the "window of opportunity" for cooperating with the Russians on a joint missile defense system through agreeable ABM

Treaty amendment has passed. There is currently an attempt at a "muddle through" course of action by those who wish to maintain the ABM Treaty regime, however, their efforts are being overshadowed by the forces driving the United States to develop NMD. The real path to NMD is by way of eroding the ABM Treaty through the development of "new and exotic" technologies. The ABM Treaty has always been known to have serious ambiguities which could leave it open to erosion through "new and exotic" technologies. Such technologies are becoming reality today. When one surveys the anti-ballistic missile systems being researched and tested today, in both the TMD and NMD programs, there is significant potential for these systems to provide the United States with a *de facto* NMD capability.

One example of such a system is the full Navy Theater Wide system. Although NTW Block II has not been anointed as being "ABM Treaty compliant," the system enjoys widespread support on Capitol Hill and among the shipbuilding and aerospace industries. The Navy Theater Wide system has been the recipient of considerable funding over the past four years. It also has the best track record, in ABM tests to date, of the advanced ABM systems under study. The system appears on its way to being fielded by around 2005. If this is indeed the case, and the Navy ultimately takes on a sea-based strategic defense mission, then the Navy must come to grips with several issues: (1) matching optimal AEGIS ship stationing requirements to accommodate both the overseas presence missions and the strategic missile defense missions; (2) having enough AEGIS ships to fulfill ABM mission functions after the AEGIS cruisers begin to decommission in the next century, which will require either planning for a new class of warship (other than the DD-21) to meet ABM mission requirements, or constructing more AEGIS ships in the near term, and (3) having enough interceptor missiles

on station, and providing for subsequent reload capability to adopt an interceptor salvo policy of "4 on 1" against a larger number of incoming missiles.

The 21<sup>st</sup> century will undoubtedly see a continued rise in both the range and lethality of strategic ballistic missiles capable of delivering WMD to the shores of the continental United States. As the number of state actors which possess these weapons increase, so do the chances that they might actually be used, particularly if the state actor in question is perceived to be an irrational one. During the days of the Cold War, a bi-lateral "balance of terror" kept the United States and the Soviet Union from annihilating each other with nuclear-tipped missiles. The old bi-polar nature of the international security environment is no more, and in its place is an emerging multi-polar international environment. In terms of stability, the multi-polar international arena is historically the most unstable form of international structure. It will take years to develop a reliable NMD system. Three years is not enough time to develop an NMD system architecture from the ground up, regardless of how much "research" has been done beforehand. It currently takes three years to build just one U.S. Navy warship, and it took years before that to design and plan it. Developing a coherent NMD strategic defense doctrine and integrating NMD capabilities into the Joint operational and planning culture will take even longer. The United States needs to prepare now for the growing ballistic missile threat, and begin deploying a comprehensive NMD system, be it land-based, sea-based, space-based, or a combination of all three because, as Sen. Thad Cochran (R-MS) has said, "better to be a year early, than a year late."<sup>1</sup>

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<sup>1</sup> George C. Wilson, "Senate GOP Launches Bill to Force Clinton to Deploy Missile Defense," *Legi-Slate*, quoting Senator Cochran.



## APPENDIX A. THE ABM TREATY

### TREATY BETWEEN THE UNITED STATES OF AMERICA AND THE UNION OF SOVIET SOCIALIST REPUBLICS ON THE LIMITATION OF ANTI-BALLISTIC MISSILE SYSTEMS

*Signed at Moscow May 26, 1972*  
*Ratification advised by U.S. Senate August 3, 1972*  
*Ratified by U.S. President September 30, 1972*  
*Proclaimed by U.S. President October 3, 1972*  
*Instruments of ratification exchanged October 3, 1972*  
*Entered into force October 3, 1972*

The United States of America and the Union of Soviet Socialist Republics, hereinafter referred to as the Parties,

Proceeding from the premise that nuclear war would have devastating consequences for all mankind,

Considering that effective measures to limit anti-ballistic missile systems would be a substantial factor in curbing the race in strategic offensive arms and would lead to a decrease in the risk of outbreak of war involving nuclear weapons,

Proceeding from the premise that the limitation of anti-ballistic missile systems, as well as certain agreed measures with respect to the limitation of strategic offensive arms, would contribute to the creation of more favorable conditions for further negotiations on limiting strategic arms,

Mindful of their obligations under Article VI of the Treaty on the Non-Proliferation of Nuclear Weapons,

Declaring their intention to achieve at the earliest possible date the cessation of the nuclear arms race and to take effective measures toward reductions in strategic arms, nuclear disarmament, and general and complete disarmament,

Desiring to contribute to the relaxation of international tension and the strengthening of trust between States,

Have agreed as follows:

## **Article I**

1. Each Party undertakes to limit anti-ballistic missile (ABM) systems and to adopt other measures in accordance with the provisions of this Treaty.

2. Each Party undertakes not to deploy ABM systems for a defense of the territory of its country and not to provide a base for such a defense, and not to deploy ABM systems for defense of an individual region except as provided for in Article III of this Treaty.

## **Article II**

1. For the purpose of this Treaty an ABM system is a system to counter strategic ballistic missiles or their elements in flight trajectory, currently consisting of:

(a) ABM interceptor missiles, which are interceptor missiles constructed and deployed for an ABM role, or of a type tested in an ABM mode;

(b) ABM launchers, which are launchers constructed and deployed for launching ABM interceptor missiles; and

(c) ABM radars, which are radars constructed and deployed for an ABM role, or of a type tested in an ABM mode.

2. The ABM system components listed in paragraph 1 of this Article include those which are:

(a) operational;

(b) under construction;

(c) undergoing testing;

(d) undergoing overhaul, repair, or conversion; or

(e) mothballed.

## **Article III**

Each Party undertakes not to deploy ABM systems or their components except that:

(a) within one ABM system deployment area having a radius of one hundred and fifty kilometers and centered on the Party's national capital, a Party may deploy: (1) no more than

one hundred ABM launchers and no more than one hundred ABM interceptor missiles at launch sites, and (2) ABM radars within no more than six ABM radar complexes, the area of each complex being circular and having a diameter of no more than three kilometers; and

(b) within one ABM system deployment area having a radius of one hundred and fifty kilometers and containing ICBM silo launchers, a Party may deploy; (1) no more than one hundred ABM launchers and no more than one hundred ABM interceptor missiles at launch sites, (2) two large phased-array ABM radars comparable in potential to corresponding ABM radars operational or under construction on the date of signature of the Treaty in an ABM system deployment area containing ICBM silo launchers, and (3) no more than eighteen ABM radars each having a potential less than the potential of the smaller of the above-mentioned two large phased array ABM radars.

#### **Article IV**

The limitations provided for in Article III shall not apply to ABM systems or their components used for development or testing, and located within current or additionally agreed test ranges. Each party may have no more than a total of fifteen ABM launchers at test ranges.

#### **Article V**

1. Each Party undertakes not to develop, test, or deploy ABM systems or components which are sea-based, air-based, space-based, or mobile land-based.

2. Each Party undertakes not to develop, test, or deploy ABM launchers for launching more than one ABM interceptor missile at a time from each launcher, not to modify deployed launchers to provide them with such capability, not to develop, test, or deploy automatic or semi-automatic or other similar systems for rapid reload of ABM launchers.

#### **Article VI**

To enhance assurance of the effectiveness of the limitations on ABM systems and their components provided by the Treaty, each Party undertakes:

(a) not to give missiles, launchers, or radars, other than ABM interceptor missiles, ABM launchers, or ABM radars, capabilities to counter strategic ballistic missiles or their elements in flight trajectory, and not to test them in an ABM mode; and

(b) not to deploy in the future radars for early warning of strategic ballistic missile attack except at locations along the periphery of its national territory and oriented outward.



## **Article VII**

Subject to the provisions of this Treaty, modernization and replacement of ABM systems or their components may be carried out.

## **Article VIII**

ABM systems or their components in excess of the numbers or outside the areas specified in this Treaty, as well as ABM systems or their components prohibited by this Treaty, shall be destroyed or dismantled under agreed procedures within the shortest possible agreed period of time.

## **Article IX**

To assure the viability and effectiveness of this Treaty, each Party undertakes not to transfer to other States, and not to deploy outside its national territory, ABM systems or their components limited by this Treaty.

## **Article X**

Each Party undertakes not to assume any international obligations which would conflict with this Treaty.

## **Article XI**

The Parties undertake to continue active negotiations for limitations on strategic offensive arms.

## **Article XII**

1. For the purpose of providing assurance of compliance with the provisions of this treaty, each Party shall use national technical means of verification at its disposal in a manner consistent with generally recognized principles or international law.
2. Each Party undertakes not to interfere with the national technical means of verification of the other Party operating in accordance with paragraph 1 of this Article.
3. Each Party undertakes not to use deliberate concealment measures which impede

verification by national technical means of compliance with the provisions of this Treaty. This obligation shall not require changes in current construction, assembly, conversion, or overhaul practices.

### **Article XIII**

1. To promote the objectives and implementation of the provisions of this Treaty, the Parties shall establish promptly a Standing Consultative Commission, within the framework of which they will:

(a) consider questions concerning compliance with the obligations assumed and related situations which may be considered ambiguous;

(b) provide on a voluntary basis such information as either Party considers necessary to assure confidence in compliance with the obligations assumed;

(c) consider questions involving unintended interference with national technical means of verification;

(d) consider possible changes in the strategic situation which have a bearing on the provisions of this Treaty;

(e) agree upon procedures and dates for destruction or dismantling of ABM systems or their components in cases provided for by the provisions of this Treaty;

(f) consider, as appropriate, proposals for further measures aimed at limiting strategic arms.

2. The Parties through consultation shall establish, and may amend as appropriate, Regulations of the Standing Consultative Commission governing procedures, composition and other relevant matters.

### **Article XIV**

1. Each Party may propose amendments to this Treaty. Agreed amendments shall enter into force in accordance with the procedures governing the entry into force of this Treaty.

2. Five years after entry into force of this Treaty, and at five-year intervals thereafter, the Parties shall together conduct a review of this Treaty.

## **Article XV**

1. This Treaty shall be of unlimited duration.
2. Each Party shall, in exercising its national sovereignty, have the right to withdraw from this Treaty if it decides that extraordinary events related to the subject matter of this Treaty have jeopardized its supreme interests. It shall give notice of its decision to the other Party six months prior to withdrawal from the Treaty. Such notice shall include a statement of the extraordinary events the notifying Party regards as having jeopardized its supreme interests.

## **Article XVI**

1. This Treaty shall be subject to ratification in accordance with the constitutional procedures of each Party. The Treaty shall enter into force on the day of the exchange of instruments of ratification.
2. This Treaty shall be registered pursuant to Article 102 of the Charter of the United Nations.

DONE at Moscow on May 26, 1972, in two copies, each in the English and Russian languages, both texts being equally authentic.

**FOR THE UNITED STATES  
OF AMERICA**

**RICHARD NIXON**

*President of the United  
States of America*

**FOR THE UNION OF SOVIET  
SOCIALIST REPUBLICS**

**L. I. BREZHNEV**

*General Secretary of the Central  
Committee of the CPSU*

**AGREED STATEMENTS, COMMON UNDERSTANDINGS, AND UNILATERAL STATEMENTS  
REGARDING THE TREATY BETWEEN  
THE UNITED STATES OF AMERICA AND  
THE UNION OF SOVIET SOCIALIST REPUBLICS  
ON THE LIMITATION OF ANTI-BALLISTIC MISSILES**

**1. Agreed Statements**

The document set forth below was agreed upon and initialed by the Heads of the Delegations on May 26, 1972 (letter designations added);

**AGREED STATEMENTS REGARDING THE TREATY  
BETWEEN THE UNITED STATES OF AMERICA  
AND THE UNION OF SOVIET SOCIALIST REPUBLICS  
ON THE LIMITATION OF ANTI-BALLISTIC MISSILE SYSTEMS**

[A]

The Parties understand that, in addition to the ABM radars which may be deployed in accordance with subparagraph (a) of Article III of the Treaty, those non-phased array ABM radars operational on the date of signature of the Treaty within the ABM system deployment area for defense of the national capital may be retained.

[B]

The Parties understand that the potential (the product of mean emitted power in watts and antenna area in square meters) of the smaller of the two large phased-array ABM radars referred to in subparagraph (b) of Article III of the Treaty is considered for purposes of the Treaty to be three million.

[C]

The Parties understand that the center of the ABM system deployment area centered on the national capital and the center of the ABM system deployment area containing ICBM silo launchers for each Party shall be separated by no less than thirteen hundred kilometers.

[D]

In order to insure fulfillment of the obligation not to deploy ABM systems and their components except as provided in Article III of the Treaty, the Parties agree that in the event ABM systems based on other physical principles and including components capable of substituting for ABM interceptor missiles, ABM launchers, or ABM radars are created in the future, specific limitations on such systems and their components would be subject to discussion in accordance with Article XIII and agreement in accordance with Article XIV of the Treaty.

[E]

The Parties understand that Article V of the Treaty includes obligations not to develop, test or deploy ABM interceptor missiles for delivery by each ABM interceptor missile of more than one independently guided warhead.

[F]

The Parties agree not to deploy phased-array radars having the potential (the product of mean emitted power in watts and antenna area in square meters) exceeding three million, except as provided for in Articles III, IV, and VI of the Treaty, or except for the purposes of tracking objects in outer space or for use as national technical means of verification.

[G]

The Parties understand that Article IX of the Treaty includes the obligation of the US and USSR not to provide to other States technical descriptions or blue prints specially worked out for the construction of ABM systems and their components limited by the Treaty.

## **2. Common Understandings**

Common understanding of the Parties on the following matters was reached during the negotiations:

### **A. Location of ICBM Defenses**

The U.S. Delegation made the following statement on May 26, 1972:

Article III of the ABM Treaty provides for each side one ABM system deployment area centered on its national capital and one ABM system deployment area containing ICBM silo launchers. The two sides have registered agreement on the following statement: "The Parties understand that the center of the ABM system deployment area centered on the national capital and the center of the ABM system deployment area containing ICBM silo launchers for each Party shall be separated by no less than thirteen hundred kilometers." In this connection, the U.S. side notes that its ABM system deployment area for defense of ICBM silo launchers, located west of the Mississippi River, will be centered in the Grand Forks ICBM silo launcher deployment area. (See Agreed Statement [C].)

#### B. ABM Test Ranges

The U.S. Delegation made the following statement on April 26, 1972:

Article IV of the ABM Treaty provides that "the limitations provided for in Article III shall not apply to ABM systems or their components used for development or testing, and located within current or additionally agreed test ranges." We believe it would be useful to assure that there is no misunderstanding as to current ABM test ranges. It is our understanding that ABM test ranges encompass the area within which ABM components are located for test purposes. The current U.S. ABM test ranges are at White Sands, New Mexico, and at Kwajalein Atoll, and the current Soviet ABM test range is near Sary Shagan in Kazakhstan. We consider that non-phased array radars of types used for range safety or instrumentation purposes may be located outside of ABM test ranges. We interpret the reference in Article IV to "additionally agreed test ranges" to mean that ABM components will not be located at any other test ranges without prior agreement between our Governments that there will be such additional ABM test ranges.

On May 5, 1972, the Soviet Delegation stated that there was a common understanding on what ABM test ranges were, that the use of the types of non-ABM radars for range safety or instrumentation was not limited under the Treaty, that the reference in Article IV to "additionally agreed" test ranges was sufficiently clear, and that national means permitted identifying current test ranges.

#### C. Mobile ABM Systems

On January 29, 1972, the U.S. delegation made the following statement:

Article V(1) of the Joint Draft text of the ABM Treaty includes an undertaking not to develop, test, or deploy mobile land-based ABM systems and their components. On May 5, 1971, the U.S. side indicated that, in its view, a prohibition on deployment of mobile ABM systems and components would rule out the deployment of ABM launchers and radars which were not permanent fixed types. At that time, we asked for the Soviet view of this

interpretation. Does the Soviet side agree with the U.S. side's interpretation put forward on May 5, 1971?

On April 13, 1972, the Soviet delegation said there is a general common understanding on this matter.

#### D. Standing Consultative Commission

Ambassador Smith made the following statement on May 22, 1972:

The United States proposes that the side agree that, with regard to initial implementation of the ABM Treaty's Article XIII on the Standing Consultative Commission (SCC) and of the consultation Articles to the Interim Agreements on offensive arms and the Accidents Agreement,<sup>2</sup> agreement establishing the SCC will be worked out early in the follow-on SALT negotiations; until that is completed, the following arrangements will prevail: when SALT is in session, any consultation desired by either side under these Articles can be carried out by the two SALT Delegations; when SALT is not in session, *ad hoc* arrangements for any desired consultations under these Articles may be made through diplomatic channels.

Minister Semenov replied that, on an *ad referendum* basis, he could agree that the U.S. statement corresponded to the Soviet understanding.

#### E. Standstill

On May 6, 1972, Minister Semenov made the following statement:

In an effort to accommodate the wishes of the U.S. side, the Soviet Delegation is prepared to proceed on the basis that the two sides will in fact observe the obligations of both the Interim Agreement and the ABM Treaty beginning from the date of signature of these two documents.

In reply, the U.S. delegation made the following statement on May 20, 1972:

The U.S. agrees in principle with the Soviet statement made on May 6 concerning observance of obligations beginning from date of signature but we would like to make clear our understanding that this means that, pending ratification and acceptance, neither side would take any action prohibited by the agreements after they had entered into force. This understanding would continue to apply in the absence of notification by either signatory of

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<sup>2</sup> See Article 7 of Agreement to Reduce the Risk of Outbreak or Nuclear War Between the United States of America and the Union of Soviet Socialist Republics, signed Sept. 30, 1971.

its intention not to proceed with ratification or approval.

The Soviet delegation indicated agreement with the U.S. statement.

### **3. Unilateral Statements**

The following noteworthy unilateral statements were made during the negotiations by the United States Delegation:

#### **A. Withdrawal from the ABM Treaty**

On May 9, 1972, Ambassador Smith made the following statement:

The U.S. Delegation has stressed the importance the U.S. Government attaches to achieving agreement on more complete limitations on strategic offensive arms, following agreement on an ABM Treaty and on an Interim Agreement on certain measures with respect to the limitation of strategic offensive arms. The U.S. delegation believes that an objective of the follow-on negotiations should be to constrain and reduce on a long-term basis threats to the survivability of our respective strategic retaliatory forces. The USSR delegation has also indicated that the objectives of SALT would remain unfulfilled without the achievement of an agreement providing for more complete limitations on strategic arms. If an agreement providing for more complete strategic offensive arms limitations were not achieved within five years, U.S. supreme interests could be jeopardized. Should that occur, it would constitute a basis for withdrawal from the ABM Treaty. The U.S. does not wish to see such a situation occur, nor do we believe that the USSR does. It is because we wish to prevent such a situation that we emphasize the importance the U.S. Government attaches to achievement of more complete limitations on strategic offensive arms. The U.S. Executive will inform the Congress, in connection with Congressional consideration of the ABM Treaty and the Interim Agreement, of this statement of the U.S. position.

#### **B. Tested in ABM Mode**

On April 7, 1972, the U.S. Delegation made the following statement:

Article II of the Joint Text Draft uses the term "tested in an ABM mode," in defining ABM components, and Article VI includes certain obligations concerning such testing. We believe that the sides should have a common understanding of this phrase. First, we would note that the testing provisions of the ABM Treaty are intended to apply to testing which occurs after the date of signature of the Treaty, and not to any testing which may have occurred in the past. Next, we would amplify the remarks we have made on this subject during the previous Helsinki phase by setting forth the objectives which govern the U.S. view



on the subject, namely, while prohibiting testing of non-ABM components for ABM purposes: not to prevent testing of ABM components, and not to prevent testing of non-ABM components for non-ABM purposes. To clarify our interpretation of "tested in an ABM mode," we note that we would consider a launcher, missile or radar to be "tested in an ABM mode" if, for example, any of the following events occur: (1) a launcher is used to launch an ABM interceptor missile, (2) an interceptor missile is flight tested against a target vehicle which has a flight trajectory with characteristics of a ballistic missile flight trajectory, or is flight tested in conjunction with the test of an ABM interceptor missile or an ABM radar at the same test range, or is flight tested to an altitude consistent with interception of targets against which air defenses are deployed, (3) a radar makes measurements on a cooperative target vehicle of the kind referred to in item (2) above during the reentry portion of its trajectory or makes measurements in conjunction with the test of an ABM interceptor missile or an ABM radar at the same test range. Radars used for purposes such as range safety or instrumentation would be exempt from application of these criteria.

#### C. No-Transfer Article of ABM Treaty

On April 18, 1972, the U.S. Delegation made the following statement:

In regard to this Article [IX], I have a brief and I believe self-explanatory statement to make. The U.S. side wishes to make clear that the provisions of this Article do not set a precedent for whatever provision may be considered for a Treaty on Limiting Strategic Offensive Arms. The question of transfer of strategic offensive arms is a far more complex issue, which may require a different solution.

#### D. No Increase in Defense of Early Warning Radars

On July 28, 1970, the U.S. delegation made the following statement:

Since Hen House radars [Soviet ballistic early warning radars] can detect and track ballistic missile warheads at great distances, they have a significant ABM potential. Accordingly, the U.S. would regard any increase in the defenses of such radars by surface-to-air missiles as inconsistent with an agreement.

## APPENDIX B. 1974 PROTOCOL TO THE ABM TREATY

### PROTOCOL TO THE TREATY BETWEEN THE UNITED STATES OF AMERICA AND THE UNION OF SOVIET SOCIALIST REPUBLICS ON THE LIMITATION OF ANTI-BALLISTIC MISSILE SYSTEMS

*Signed at Moscow July 3, 1974*

*Ratification advised by U.S. Senate November 10, 1975*

*Ratified by U.S. President March 19, 1976*

*Instruments of ratification exchanged May 24, 1976*

*Proclaimed by U.S. President July 6, 1976*

*Entered into force May 24, 1976*

The United States of America and the Union of Soviet Socialist Republics, hereinafter referred to as the Parties,

Proceeding from the Basic Principles of Relations between the United States of America and the Union of Soviet Socialist Republics signed on May 29, 1972,

Desiring to further the objectives of the Treaty between the United States of America and the Union of Soviet Socialist Republics on the Limitation of Anti-Ballistic Missile Systems signed on May 26, 1972, hereinafter referred to as the Treaty,

Reaffirming their conviction that the adoption of further measures for the limitation of strategic arms would contribute to strengthening international peace and security,

Proceeding from the premise that further limitation of anti-ballistic missile systems will create more favorable conditions for the completion of work on a permanent agreement on more complete measures for the limitation of strategic offensive arms.

Have agreed as follows:

#### Article I

1. Each Party shall be limited at any one time to a single area out of the two provided in Article III of the Treaty for deployment of anti-ballistic missile (ABM) systems or their components and accordingly shall not exercise its right to deploy an ABM system or its components in the second of the two ABM system deployment areas permitted by Article III of the Treaty, except as an exchange of one permitted area for the other in accordance with Article II of this Protocol.

2. Accordingly, except as permitted by Article II of this Protocol: the United States of America shall not deploy an ABM system or its components in the area centered on its capital, as permitted by Article III(a) of the Treaty, and the Soviet Union shall not deploy an ABM system or its components in the deployment area of intercontinental ballistic missile (ICBM) silo launchers as permitted by Article III(b) of the Treaty.

## **Article II**

1. Each Party shall have the right to dismantle or destroy its ABM system and the components thereof in the area where they are presently deployed and to deploy an ABM system or its components in the alternative area permitted by Article III of the Treaty, provided that prior to initiation of construction, notification is given in accord with the procedure agreed to in the Standing Consultative Commission, during the year beginning October 3, 1977 and ending October 2, 1978, or during any year which commences at five year intervals thereafter, those being the years for periodic review of the Treaty, as provided in Article XIV of the Treaty. This right may be exercised only once.

2. Accordingly, in the event of such notice, the United States would have the right to dismantle or destroy the ABM system and its components in the deployment area of ICBM silo launchers and deploy an ABM system or its components in an area centered on its capital, as permitted by Article III(a) of the Treaty, and the Soviet Union would have the right to dismantle or destroy the ABM system and its components in the area centered on its capital and to deploy an ABM system or its components in an area containing ICBM silo launchers, as permitted by Article III(b) of the Treaty.

3. Dismantling or destruction and deployment of ABM systems or their components and the notification thereof shall be carried out in accordance with Article VIII of the ABM Treaty and procedures agreed to in the Standing Consultative Commission.

## **Article III**

The rights and obligations established by the Treaty remain in force and shall be complied with by the Parties except to the extent modified by this Protocol. In particular, the deployment of an ABM system or its components within the area selected shall remain limited by the level and other requirements established by the Treaty.

## **Article IV**

This Protocol shall be subject to ratification in accordance with the constitutional procedures of each Party. It shall enter into force on the day of the exchange of instruments of ratification and shall thereafter be considered an integral part of the Treaty.

DONE at Moscow on July 3, 1974, in duplicate, in English and Russian languages,  
both texts being equally authentic.

For the United States of America:

**RICHARD NIXON**

*President of the United States of America*

For the Union of Soviet Socialist Republics:

**L. I. BREZHNEV**

*General Secretary of the Central Committee of the CPSU*



## **APPENDIX C. ABM TREATY AGREEMENTS OF 26 SEPTEMBER 1997**

*September 26, 1997*

### **JOINT COMMUNIQUE ON THE SIGNING OF THE ABM TREATY DOCUMENTS**

The Secretary of State of the United States of America and the Foreign Ministers of the Russian Federation, the Republic of Belarus, the Republic of Kazakhstan, and Ukraine have just signed the Memorandum of Understanding on Succession to the ABM Treaty Between the United States of America and the Union of Soviet Socialist Republics. They welcome the signature of four related documents by Representatives of their respective Governments: First Agreed Statement relating to the ABM Treaty; Second Agreed Statement Relating to the ABM Treaty; a Confidence-Building Measures Agreement; and the Regulations of the Standing Consultative Commission.

*September 26, 1997*

**MEMORANDUM OF UNDERSTANDING  
RELATING TO THE TREATY  
BETWEEN  
THE UNITED STATES OF AMERICA  
AND THE UNION OF SOVIET SOCIALIST REPUBLICS  
ON THE LIMITATION OF ANTI-BALLISTIC MISSILE SYSTEMS  
OF MAY 26, 1972**

The United States of America, and the Republic of Belarus, the Republic of Kazakhstan, the Russian Federation, and Ukraine, hereinafter referred to for purposes of this Memorandum as the Union of Soviet Socialist Republics (USSR) Successor States,

Recognizing the importance of the viability of the Treaty Between the United States of America and the Union of Soviet Socialist Republics on the Limitation of Anti-Ballistic Missile Systems of May 26, 1972, hereinafter referred to as the Treaty, with the aim of maintaining strategic stability,

Recognizing the changes in the political situation resulting from the establishment of new independent states on the territory of the former USSR,

Have, in connection with the Treaty, agreed as follows:

**Article I**

The United States of America, the Republic of Belarus, the Republic of Kazakhstan, the Russian Federation, and Ukraine, upon entry into force of this Memorandum, shall constitute the parties to the Treaty.

**Article II**

The USSR Successor States shall assume the rights and obligations of the former USSR under the Treaty and its associated documents.

**Article III**

Each USSR Successor State shall implement the provisions of the Treaty with regard to its territory and with regard to its activities, wherever such activities are carried out by that State, independently or in cooperation with any other State.

**Article IV**

For purposes of Treaty implementation:

(a) the term "Union of Soviet Socialist Republics" shall mean the USSR Successor States;

(b) the terms "national territory" and "territory of its country" when used to refer to the former USSR shall mean the combined national territories of the USSR Successor States, and the term "periphery of its national territory" when used to refer to the former USSR shall mean the periphery of the combined national territories of those States; and

(c) the term "capital" when used to refer to the capital of the Union of Soviet Socialist Republics in Article III of the Treaty and the protocol thereto of July 3, 1974, shall continue to mean the city of Moscow.

#### **Article V**

A USSR Successor State or USSR Successor States may continue to use any facility that is subject to the provisions of the Treaty and that is currently located on the territory of any State that is not a Party to the Treaty, with the consent of such State and provided that the use of such facility shall remain consistent with the provisions of the Treaty.

#### **Article VI**

The USSR Successor States shall collectively be limited at any one time to a single anti-ballistic missile (ABM) system deployment area and to a total of no more than fifteen ABM launchers at ABM test ranges, in accordance with the provisions of the Treaty and its associated documents, including the Protocols of July 3, 1974.

#### **Article VII**

The obligations contained in Article IX of the Treaty and Agreed Statement "G" regarding the Treaty shall not apply to transfers between or among the USSR Successor States.

#### **Article VIII**

The Standing Consultative Commission, hereinafter referred to as the Commission, shall function in the manner provided for by the Treaty and the Memorandum of Understanding Between the Government of the United States of America and the Government of the Union of Soviet Socialist Republics Regarding the Establishment of a Standing Consultative Commission of December 21, 1972, as well as by the Regulations of the Commission, which shall reflect the multilateral character of the Treaty and the equal legal status of the Parties in reaching decisions in the Commission.



## Article IX

1. This Memorandum shall be subject to ratification or approval by the signatory States, in accordance with the constitutional procedures of those States.

2. The functions of the depositary of this Memorandum shall be exercised by the Government of the United States of America.

3. This Memorandum shall enter into force on the date when the Governments of all signatory States have deposited instruments of ratification or approval of this Memorandum and shall remain in force so long as the Treaty remains in force.

4. Each State that has ratified or approved this Memorandum shall also be bound by the provisions of the First Agreed Statement of September 26, 1997, Relating to the Treaty between the United States of America and the Union of Soviet Socialist Republics on the Limitation of Anti-Ballistic Missile Systems on May 26, 1972, and the Second Agreed Statement of September 26, 1997, relating to the Treaty Between the United States of America and the Union of Soviet Socialist Republics on the Limitation of Anti-Ballistic Missile Systems of May 26, 1972.

DONE at New York City on September 26, 1997, in five copies, each in the English and Russian languages, both texts being equally authentic.

FOR THE UNITED STATES OF AMERICA:

Madeline Albright

FOR THE REPUBLIC OF BELARUS:

I. Antonovich

FOR THE REPUBLIC OF KAZAKHSTAN:

K. Tokayev

FOR THE RUSSIAN FEDERATION:

Y. Primakov

FOR UKRAINE:

H. Udovenko

*September 26, 1997*

**STANDING CONSULTATIVE COMMISSION**

**FIRST AGREED STATEMENT  
RELATING TO THE TREATY BETWEEN  
THE UNITED STATES OF AMERICA  
AND THE UNION OF SOVIET SOCIALIST REPUBLICS  
ON THE LIMITATION OF ANTI-BALLISTIC MISSILE SYSTEMS  
OF MAY 26, 1972**

In connection with the provisions of the Treaty between the United States of America and the Union of Soviet Socialist Republics on the Limitation of Anti-Ballistic Missile Systems of May 26, 1972, hereinafter referred to as the Treaty, the Parties to the Treaty have, within the framework of the Standing Consultative Commission, reached agreement on the following:

1. Land-based, sea-based, and air-based interceptor missiles, interceptor missile launchers, and radars, other than anti-ballistic missile (ABM) interceptor missiles, ABM Launchers, or ABM radars, respectively, shall be deemed, within the meaning of paragraph (a) of Article VI of the Treaty, not to have been given capabilities to counter strategic ballistic missiles or their elements in flight trajectory and not to have been tested in an ABM mode, if, in the course of testing them separately or in a system:

(a) the velocity of the interceptor missile does not exceed 3 km/sec over any part of its flight trajectory;

(b) the velocity of the ballistic target-missile does not exceed 5 km/sec over any part of its flight trajectory; and

(c) the range of the ballistic target-missile does not exceed 3,500 kilometers.

2. The Parties have additionally agreed on reciprocal implementation of the confidence-building measures set forth in the Agreement on Confidence-Building Measures Related to Systems to Counter Ballistic Missiles Other Than Strategic Ballistic Missiles of September 26, 1997.

3. This Agreed Statement shall enter into force simultaneously with entry into force of the Memorandum of Understanding of September 26, 1997, Relating to the Treaty Between the United States of America and the Union of Soviet Socialist Republics on the Limitation of Anti-Ballistic Missile Systems of May 26, 1972.

DONE at New York City on September 26, 1997, in five copies, each in the English and Russian languages, both texts being equally authentic.

FOR THE UNITED STATES OF AMERICA:

Stanley Riveles

FOR THE REPUBLIC OF BELARUS:

S. Agurtsov

FOR THE REPUBLIC OF KAZAKHSTAN:

K. Zhanbatyrov

FOR THE RUSSIAN FEDERATION:

V. Koltunov

FOR UKRAINE:

O. Rybak

**COMMON UNDERSTANDINGS  
RELATED TO THE FIRST AGREED STATEMENT  
OF SEPTEMBER 26, 1997,  
RELATING TO THE TREATY BETWEEN  
THE UNITED STATES OF AMERICA  
AND THE UNION OF SOVIET SOCIALIST REPUBLICS  
ON THE LIMITATION OF ANTI-BALLISTIC MISSILE SYSTEMS  
OF MAY 26, 1972**

**I**

The term "interceptor missile" as used in the First Agreed Statement of September 26, 1997, shall refer to any missile subject to the provisions of paragraph (a) of Article VI of the Treaty if such a missile:

(a) has been developed by a Party as a missile to counter ballistic missiles other than strategic ballistic missiles; or

(b) has been declared by a Party as a missile to counter ballistic missiles other than strategic ballistic missiles; or

(c) has been tested by a Party even once with the use of a ballistic target-missile.

With respect to subparagraphs (a), (b), and (c), such a missile shall be considered an interceptor missile in all its launches.

**II**

The provisions of paragraph 1 of the First Agreed Statement of September 26, 1997, do not supercede or amend any provision of the Agreed Statement of November 1, 1978, and do not alter the meaning of the term "tested in an ABM mode" as that term is used in the Treaty, including the Agreed Statement of November 1, 1978.

**III**

The Parties have agreed that, for the purposes of the First Agreed Statement of September 26, 1997, the velocity of an interceptor missile shall be determined in an earth-centered coordinate system fixed in relation to the Earth.

**IV**

The Parties have agreed that, for the purposes of the First Agreed Statement of

September 26, 1997, the velocity of space-based interceptor missiles shall be considered to exceed 3 km/sec.

These Common Understandings shall be considered an attachment to the First Agreed Statement of September 26 1997, and shall constitute an integral part thereof.

*September 26, 1997*

**STANDING CONSULTATIVE COMMISSION**

**SECOND AGREED STATEMENT**  
**RELATING TO THE TREATY BETWEEN**  
**THE UNITED STATES OF AMERICA**  
**AND THE UNION OF SOVIET SOCIALIST REPUBLICS**  
**ON THE LIMITATION OF ANTI-BALLISTIC MISSILE SYSTEMS**  
**OF MAY 26, 1972**

In connection with the provisions of the Treaty Between the United States of America and the Union of Soviet Socialist Republics on the Limitation of Anti-Ballistic Missile Systems of May 26, 1972, hereinafter referred to as the Treaty, the Parties to the Treaty,

Expressing their commitment to strengthening strategic stability and international security,

Emphasizing the importance of further reductions in strategic offensive arms,

Recognizing the fundamental significance of the Treaty for the above objectives,

Recognizing the necessity for effective systems to counter ballistic missiles other than strategic ballistic missiles,

Considering it their common task to preserve the Treaty, prevent its circumvention and enhance its viability,

Relying on the following principles that have served as a basis for reaching this agreement:

- the Parties are committed to the Treaty as a cornerstone of strategic stability;
- the Parties must have the option to establish and to deploy effective systems to counter ballistic missiles other than strategic ballistic missiles, and such activity must not lead to violation of the Treaty;
- systems to counter ballistic missiles other than strategic ballistic missiles may be deployed by each Party which will not pose a realistic threat to the strategic nuclear force of another Party and which will not be tested to give such systems that capability;

-- systems to counter ballistic missiles other than strategic ballistic missiles will not be deployed by the Parties for use against each other; and

-- the scale of deployment - in number and geographic scope - of systems to counter ballistic missiles other than strategic ballistic missiles by any Party will be consistent with programs for ballistic missiles other than strategic ballistic missiles confronting that Party;

Have, within the framework of the Standing Consultative Commission, with respect to systems to counter ballistic missiles with interceptor missiles whose velocity exceeds 3 km/sec over any part of their flight trajectory. Hereinafter referred to as systems covered by this Agreed Statement, reached agreement on the following:

1. Each Party undertakes that, in the course of testing, separately or in system, land-based, sea-based, and air-based interceptor missiles, interceptor missile launchers, and radars, of systems covered by this Agreed Statement, which are not anti-ballistic missile (ABM) interceptor missiles, ABM launchers, or ABM radars, respectively:

(a) the velocity of the ballistic target-missile will not exceed 5 km/sec over any part of its flight trajectory; and

(b) the range of the ballistic target-missile will not exceed 3,500 kilometers.

2. Each Party, in order to preclude the possibility of ambiguous situations or misunderstandings related to compliance with the provisions of the Treaty, undertakes not to develop, test, or deploy space-based interceptor missiles to counter ballistic missiles other than strategic ballistic missiles, or space-based components based on other physical principles, whether or not part of a system, that are capable of substituting for such interceptor missiles.

3. In order to enhance confidence in compliance with the provisions of the Treaty, the Parties shall implement the provisions of the Agreement on Confidence-Building Measures Related to Systems to Counter Ballistic Missiles Other Than Strategic Ballistic Missiles of September 26, 1997, hereinafter referred to as the Confidence-Building Measures Agreement, with respect to systems covered by this Agreed Statement and not subject to the Confidence-Building Measures Agreement on the date of its entry into force. Each such system shall become subject to the provisions of the Confidence-Building Measures Agreement no later than 180 days in advance of the planned date of the first launch of an interceptor missile of that system. All information provided for in the Confidence-Building Measures Agreement shall initially be provided no later than 30 days after such a system becomes subject to the provisions of the Confidence-Building Measures Agreement.

4. In order to ensure the viability of the Treaty as technologies related to systems to counter ballistic missiles other than strategic ballistic missiles evolve, and in accordance with Article XIII of the Treaty, the Parties undertake to hold consultations and discuss, within the

framework of the Standing Consultative Commission, questions or concerns that any Party may have regarding activities involving systems covered by this Agreed Statement, including questions and concerns related to the implementation of the provisions of this Agreed Statement.

5. This Agreed Statement shall enter into force simultaneously with entry into force of the Memorandum of Understanding of September 26, 1997, Relating to the Treaty Between the United States of America and the Union of Soviet Socialist Republics on the Limitation of Anti-Ballistic Missile Systems of May 26, 1972.

DONE at New York City on September 26, 1997, in five copies, each in the English and Russian languages, both texts being equally authentic.

FOR THE UNITED STATES OF AMERICA:

Stanley Riveles

FOR THE REPUBLIC OF BELARUS:

S. Agurtsou

FOR THE REPUBLIC OF KAZAKHSTAN:

K. Zhanbatyrov

FOR THE RUSSIAN FEDERATION:

V. Koltunov

FOR UKRAINE:

O. Rybak



**COMMON UNDERSTANDINGS  
RELATED TO THE SECOND AGREED STATEMENT  
OF SEPTEMBER 26, 1997,  
RELATING TO THE TREATY BETWEEN  
THE UNITED STATES OF AMERICA  
AND THE UNION OF SOVIET SOCIALIST REPUBLICS  
ON THE LIMITATION OF ANTI-BALLISTIC MISSILE SYSTEMS  
OF MAY 26, 1972**

**I**

The term "interceptor missile," as used in the Second Agreed Statement of September 26, 1997, shall refer to any missile subject to the provisions of paragraph (a) of Article VI of the Treaty if such a missile:

(a) has been developed by a Party as a missile to counter ballistic missiles other than strategic ballistic missiles; or

(b) has been declared by a Party as a missile to counter ballistic missiles other than strategic ballistic missiles; or

(c) has been tested by a Party even once with the use of a ballistic target-missile.

With respect to subparagraphs (a), (b), or (c), such a missile shall be considered an interceptor missile in all its launches.

**II**

The Parties have agreed that, for the purposes of the Second Agreed Statement of September 26, 1997, the velocity of an interceptor missile as well as the velocity of a ballistic target-missile shall be determined in an earth-centered coordinate system fixed in relation to the Earth.

**III**

The Parties have agreed that for the purposes of the Second Agreed Statement of September 26, 1997, the velocity of space-based interceptor missiles shall be considered to exceed 3 km/sec.

#### IV

For systems to counter ballistic missiles other than strategic ballistic missiles with interceptor missiles whose velocity exceeds 3 km/sec over any part of their flight trajectory, that become subject to the Confidence-Building Measures Agreement in accordance with paragraph 3 of the Second Agreed Statement of September 26, 1997, the Parties understand that, in connection with the provisions of paragraph 2(b) of Section IV of the Confidence-Building measures Agreement, detailed information on such systems shall be provided in a form and scope as agreed upon by the Parties.

These Common Understandings shall be considered an attachment to the Second Agreed Statement of September 26, 1997, and shall constitute an integral part thereof.

*September 26, 1997*

**AGREEMENT ON CONFIDENCE-BUILDING MEASURES RELATED  
TO SYSTEMS TO COUNTER BALLISTIC MISSILES OTHER  
THAN STRATEGIC BALLISTIC MISSILES**

The States that have signed this Agreement, hereinafter referred to as the Parties,

Desiring to promote reciprocal openness, greater trust between the Parties, and the preservation of strategic stability,

Declaring their intention to implement, on a reciprocal basis, confidence-building measures with respect to systems to counter ballistic missiles other than strategic ballistic missiles,

Have agreed as follows:

**I. General Provisions**

1. Systems subject to this Agreement shall be: for the United States of America - the Theater High-Altitude Area Defense (THAAD) System and the Navy Theater-Wide Theater Ballistic Missile Defense Program, known to the other Parties by the same names; for the Russian Federation - the S-300V system, known to the United States of America as the SA-12 system; for the Republic of Belarus - the S-300V system, known to the United States of America as the SA-12 system; for Ukraine - the S-300V system, known to the United States of America as the SA-12 system; and other systems as agreed upon by the Parties in the future.

2. The Parties shall conduct an initial exchange of information and notifications, as provided for in this agreement, no later than 90 days after entry into force of this Agreement, reflecting the status as of the date of its entry into force, and update this information annually, unless otherwise agreed. Information shall be updated reflecting the status as of January 1 of each year and provided no later than April 1 of each year.

**II. Notifications**

1. Each Party shall provide notifications to the other Parties of test ranges and other test areas where launches of interceptor missiles of systems subject to this Agreement will take place. Notifications of test ranges and other test areas shall include the names of ranges (test areas) and their locations. Such notifications shall be provided either within 30 days after entry into force of this Agreement, or no later than 90 days in advance of the first launch

of an interceptor missile of a system subject to this Agreement at each test range (test area).

2. Each Party shall provide notification to the other Parties of each launch of an interceptor missile of systems subject to this Agreement, if during that launch a ballistic target-missile is used. In this connection:

(a) an interceptor missile launch notification shall specify the name of the test range (test area) where the interceptor missile launch will take place; the type (designation) of the interceptor missile; the planned date of the interceptor missile launch; the planned launch point of the interceptor missile (geographic coordinates; for air-based systems the geographic coordinates of the projection of the planned launch point of the interceptor missile onto the Earth's surface shall be specified); the planned launch point of the ballistic target-missile (geographic coordinates);

(b) each interceptor missile launch notification shall be provided no later than 10 days in advance of the planned date of the interceptor missile launch and shall be effective for seven days beginning with the planned date of that launch; and

(c) if the launch of the interceptor missile will not occur or has not occurred within the specified 7-day period, the Party that planned to carry out the launch of the interceptor missile shall provide a notification thereof no later than 24 hours after the expiration of the 7-day period. Such a notification shall state that the interceptor missile launch has not occurred and shall either specify a new launch date, which will establish the beginning of a new 7-day period, or state that a notification of a new launch date will be made in accordance with the procedure specified in subparagraph (b) of this paragraph.

### **III. Demonstrations of Systems and Observations of Tests**

Any Party may on a voluntary basis arrange, for any other Party or Parties, a demonstration of its systems or their components subject to this Agreement or an observation of their tests. In each specific case, the participating Parties shall agree in advance on the purpose of, and arrangements for, such demonstrations and observations.

### **IV. Assurances**

Each Party shall provide assurances that it will not deploy systems subject to this Agreement in numbers and locations so that these systems could pose a realistic threat to the strategic nuclear force of another Party. The measures used to provide such assurances shall include:

1. Each Party shall provide to the other Parties, in a form and scope to be agreed upon by the Parties, an assessment of the programs with respect to the development, testing and deployment of ballistic missiles, other than strategic ballistic missiles, confronting that

Party.

2. For each of its systems subject to this Agreement, each Party shall provide the following information:

(a) the name, type (designation), and basing mode of the system as well as of its interceptor missiles, launchers, and associated radars;

(b) the general concept of operation; the status of plans and programs; and, in addition, for systems in testing, the number of systems it plans to possess; the information shall be provided in a form and scope as agreed upon by the Parties;

(c) the class and type of basing platform:

(i) for land based systems: the number of launchers in a battalion;

(ii) for sea-based systems: the class and type of each ship, and the number of launchers on a ship of that class capable of launching interceptor missiles of each type;

(iii) for air-based systems: the type of each aircraft, and the number of interceptor missiles each aircraft is capable of carrying;

(d) the number of interceptor missiles of a fully loaded launcher.

3. For components of each of its systems subject to this Agreement, each Party shall provide the following information:

(a) for a completely assembled interceptor missile: the number of stages, the length, the maximum diameter, the type of propellant (solid or liquid), maximum velocity demonstrated during launches, and the length and diameter of the interceptor missile launch canister;

(b) for the interceptor missile launcher: the maximum number of interceptor missiles of a fully loaded launcher; and

(c) for the radar: the frequency band (in designations adopted by the International Telecommunications Union) and potential, expressed as a value that is not exceeded by the radar's potential. The potential of the radar shall mean the product of its mean emitted power in watts and its antenna area in square meters.

## **V. Additional Voluntary Measures**

Each Party may provide on a voluntary basis any other information or any other

notifications not specified elsewhere in this Agreement. The topics, amount, and time frame for such information and notifications shall be such as each party determines.

## **VI. Implementation of the Agreement**

1. To promote the objectives and implementation of the provisions of this Agreement, the Parties, within the framework of the Standing Consultative Commission established in accordance with the Treaty Between the United States of America and the Union of Soviet Socialist Republics on the Limitation of Anti-Ballistic Missile Systems of May 26, 1972, shall consider:

(a) issues concerning implementation of the obligations assumed under this Agreements, as well as related situations which may be considered ambiguous; and

(b) amendments to the provisions of this Agreement and other possible proposals on further increasing its viability.

2. The Parties shall use the Nuclear Risk Reduction Center channels or the equivalent government-to-government communications links for providing the notifications and for exchanging the information provided for in Sections II, IV, and V of this Agreement.

## **VII. Confidentiality**

Each Party undertakes not to release to public the information provided pursuant to this Agreement except with the express consent of the Party that provided such information.

## **VIII. Entry into Force and Duration**

This Agreement shall enter into force simultaneously with entry into force of the First Agreed Statement of September 26, 1997, Relating to the Treaty Between the United States of America and the Union of Soviet Socialist Republics on the Limitation of Anti-Ballistic Missile Systems on May 26, 1972, and the Second Agreed Statement of September 26, 1997, Relating to the Treaty Between the United States of America and the Union of Soviet Socialist Republics on the Limitation of Anti-Ballistic Missile Systems of May 26, 1972, and shall remain in force so long as either of those Agreed Statements remains in force.

DONE at New York City on September 26, 1997, in five copies, each in the English and Russian languages, both texts being equally authentic.

FOR THE UNITED STATES OF AMERICA:  
Stanley Riveles

FOR THE REPUBLIC OF BELARUS:

S. Agurtsou

FOR THE REPUBLIC OF KAZAKHSTAN:

K. Zhanbatyrov

FOR THE RUSSIAN FEDERATION:

V. Koltunov

FOR UKRAINE:

O. Rybak

*September 26, 1997  
New York City*

**STANDING CONSULTATIVE COMMISSION**

**JOINT STATEMENT  
ON THE ANNUAL EXCHANGE OF INFORMATION ON  
THE STATUS OF PLANS AND PROGRAMS  
WITH RESPECT TO SYSTEMS TO COUNTER BALLISTIC MISSILES  
OTHER THAN STRATEGIC BALLISTIC MISSILES**

1. The Parties understand that in implementing the provisions of paragraph 2(b) of Section IV of the Agreement on Confidence-Building Measures Related to Systems to Counter Ballistic Missiles Other Than Strategic Ballistic Missiles of September 26, 1997, each Party will provide information annually on the status of its plans and programs with respect to systems to counter ballistic missiles other than strategic ballistic missiles that includes:

(a) whether or not that Party has plans before April 1999 to test, against a ballistic target-missile, land-based, sea-based, or air-based interceptor missiles whose velocity exceeds 3 km/sec over any part of their flight trajectory;

(b) whether or not that Party has plans to develop such systems with interceptor missiles whose velocity over any part of their flight trajectory exceeds 5.5 km/sec for land-based and air-based systems or 4.5 km/sec for sea-based systems; and

(c) whether or not that Party has plans to test such systems against ballistic target-missiles with multiple independently targetable reentry vehicles or against reentry vehicles deployed or planned to be deployed on strategic ballistic missiles.

2. The Parties understand that should any Party have questions or concerns regarding activity related to any change in the statement on plans of any other Party, the Parties will, in accordance with Article XIII of the Treaty Between the United States of America and the Union of Soviet Socialist Republics on the Limitation of Anti-Ballistic Missile Systems of May 26, 1972, hereinafter referred to as the Treaty, the Second Agreed Statement of September 26, 1997, Relating to the Treaty, and Section VI of the Agreement on Confidence-Building Measures Related to Systems to Counter Ballistic Missiles Other Than Strategic Ballistic Missiles of September 26, 1997, conduct consultations, within the framework of the Standing Consultative Commission, to discuss such questions or concerns, as well as possible proposals for further increasing the viability of the Treaty, including possible proposals to amend the Second Agreed Statement of September 26, 1997.



<u>S.R.</u>	(United States of America)
<u>S.A.</u>	(Republic of Belarus)
<u>K.Z.</u>	(Republic of Kazakhstan)
<u>V.K.</u>	(Russian Federation)
<u>O.R.</u>	(Ukraine)

*September 26, 1997*  
*New York City*

**STATEMENT BY THE UNITED STATES OF AMERICA  
ON PLANS WITH RESPECT TO SYSTEMS TO COUNTER BALLISTIC MISSILES  
OTHER THAN STRATEGIC BALLISTIC MISSILES**

The United States of America states that, with regard to systems to counter ballistic missiles other than strategic ballistic missiles, it has no plans:

(a) before April 1999 to test, against a ballistic target-missile, land-based, sea-based, or air-based interceptor missile whose velocity exceeds 3 km/sec over any part of their flight trajectory;

(b) to develop such systems with interceptor missiles whose velocity over any part of their flight trajectory exceeds 5.5 km/sec for land-based and air-based systems or 4.5 km/sec for sea-based systems; or

(c) to develop such systems against ballistic target-missiles with multiple independently targetable reentry vehicles or against reentry vehicles deployed or planned to be deployed on strategic ballistic missiles.

*September 26, 1997*  
*New York City*

**STATEMENT BY THE REPUBLIC OF BELARUS  
ON PLANS WITH RESPECT TO SYSTEMS TO COUNTER BALLISTIC MISSILES  
OTHER THAN STRATEGIC BALLISTIC MISSILES**

The Republic of Belarus states that, with regard to systems to counter ballistic missiles other than strategic ballistic missiles, it has no plans:

(a) before April 1999 to test, against a ballistic target-missile, land-based, sea-based, or air-based interceptor missile whose velocity exceeds 3 km/sec over any part of their flight trajectory:

(b) to develop such systems with interceptor missiles whose velocity over any part of their flight trajectory exceeds 5.5 km/sec for land-based and air-based systems or 4.5 km/sec for sea-based systems; or

(c) to develop such systems against ballistic target-missiles with multiple independently targetable reentry vehicles or against reentry vehicles deployed or planned to be deployed on strategic ballistic missiles.

*September 26, 1997*  
*New York City*

**STATEMENT BY THE REPUBLIC OF KAZAKHSTAN  
ON PLANS WITH RESPECT TO SYSTEMS TO COUNTER BALLISTIC MISSILES  
OTHER THAN STRATEGIC BALLISTIC MISSILES**

The Republic of Kazakhstan states that, with regard to systems to counter ballistic missiles other than strategic ballistic missiles, it has no plans:

(a) before April 1999 to test, against a ballistic target-missile, land-based, sea-based, or air-based interceptor missile whose velocity exceeds 3 km/sec over any part of their flight trajectory:

(b) to develop such systems with interceptor missiles whose velocity over any part of their flight trajectory exceeds 5.5 km/sec for land-based and air-based systems or 4.5 km/sec for sea-based systems; or

(c) to develop such systems against ballistic target-missiles with multiple independently targetable reentry vehicles or against reentry vehicles deployed or planned to be deployed on strategic ballistic missiles.

*September 26, 1997  
New York City*

**STATEMENT BY THE RUSSIAN FEDERATION  
ON PLANS WITH RESPECT TO SYSTEMS TO COUNTER BALLISTIC MISSILES  
OTHER THAN STRATEGIC BALLISTIC MISSILES**

The Russian Federation states that, with regard to systems to counter ballistic missiles other than strategic ballistic missiles, it has no plans:

(a) before April 1999 to test, against a ballistic target-missile, land-based, sea-based, or air-based interceptor missile whose velocity exceeds 3 km/sec over any part of their flight trajectory:

(b) to develop such systems with interceptor missiles whose velocity over any part of their flight trajectory exceeds 5.5 km/sec for land-based and air-based systems or 4.5 km/sec for sea-based systems; or

(c) to develop such systems against ballistic target-missiles with multiple independently targetable reentry vehicles or against reentry vehicles deployed or planned to be deployed on strategic ballistic missiles.

*September 26, 1997  
New York City*

**STATEMENT BY UKRAINE  
ON PLANS WITH RESPECT TO SYSTEMS TO COUNTER BALLISTIC MISSILES  
OTHER THAN STRATEGIC BALLISTIC MISSILES**

Ukraine states that, with regard to systems to counter ballistic missiles other than strategic ballistic missiles, it has no plans:

(a) before April 1999 to test, against a ballistic target-missile, land-based, sea-based, or air-based interceptor missile whose velocity exceeds 3 km/sec over any part of their flight trajectory:

(b) to develop such systems with interceptor missiles whose velocity over any part of their flight trajectory exceeds 5.5 km/sec for land-based and air-based systems or 4.5 km/sec for sea-based systems; or

(c) to develop such systems against ballistic target-missiles with multiple independently targetable reentry vehicles or against reentry vehicles deployed or planned to be deployed on strategic ballistic missiles.

*September 26, 1997*

**REGULATIONS  
OF THE STANDING CONSULTATIVE COMMISSION**

In accordance with Article VIII of the Memorandum of Understanding of September 26, 1997, Relating to the Treaty Between the United States of America and the Union of Soviet Socialist Republics on the Limitation of Anti-Ballistic Missile Systems of May 26, 1972, the United States of America, the Republic of Belarus, the Republic of Kazakhstan, the Russian Federation, and Ukraine have agreed as follows:

**I**

1. Each Party shall have the right to be represented on the Standing Consultative Commission, hereinafter referred to as the Commission.
2. Each Party shall designate a Commissioner, a Deputy Commissioner, and such members, advisors, and experts of its delegation to the Commission as it deems necessary.
3. Each Party shall have the right to participate in all activities of the Commission.

**II**

1. At any time, Commissioners may raise for discussion any matter that is within the competence of the Commission.
2. Commissioners may also, at any time, transmit to or request from the other Commissioners, oral or written communications.
3. Commissioners shall, when possible, inform each other in advance of matters to be raised for discussion in the Commission.
4. Commissioners shall alternately preside over the meetings of a session of the Commission, unless otherwise agreed.
5. Each Party may direct that the authorities and functions of a Commissioner may be exercised by a Deputy Commissioner or other authorized person.
6. The Commission may establish working groups to undertake such activities as it may direct, including studying and preparing specific matters.

### III

1. The Commission shall be convened for sessions no less than twice a year. Such sessions proposed during the intersessional period shall be convened on a date, no later than 45 days after the date initially proposed, and with a duration agreed to by the United States of America at least one other Party.

2. Agreement on the commencement date and duration of a forthcoming session may be reached by consensus a session in progress.

3. During the intersessional period, any Commissioner may propose convening a session of the Commission by making a proposal or counter-proposal to the other Commissioners on the commencement date and duration of the forthcoming session at least 30 days in advance of the proposed commencement date of the session.

4. The agenda for a session of the Commission shall include all matters proposed by any Commissioner and communicated to the other Commissioners in advance of the session. Any matter raised during the session by any Commissioner may be considered in the Commission.

5. Sessions of the Commission shall be held in the city of Geneva, unless otherwise agreed.

### IV

1. Any matter within the competence of the Commission may be the subject of an agreement.

2. Agreements may be recorded in any form acceptable to the Parties participating in the Session.

3. The negotiation of the text of an agreement during a session of the Commission shall be done on the basis of consensus of the Parties participating in the session.

4. The United States of America shall notify, through diplomatic channels, all Parties not represented in a session of the Commission, of the final text of an agreement no later than 15 days after the final text has been negotiated in the session of the Commission.

5. A Party shall approve an agreement negotiated in the Commission by signing it in the Commission or by submitting an instrument of approval. In addition, an agreement shall be considered approved by a Party if it fails to submit a diplomatic note in accordance with subparagraph 7(b) of this Section, or if its objections are withdrawn pursuant to subparagraph 7(b) or paragraph 8 of this Section.



6. Each agreement negotiated in the Commission shall be considered adopted when all Parties have approved the agreement in accordance with paragraph 5 of this Section and shall enter into force on the date of its adoption, unless all Parties have agreed on a later date.

7. A Party that has not approved an agreement negotiated during a session of the Commission shall be bound by the agreement in one of two ways:

(a) if it submits an instrument of approval to all other Parties; or

(b) if it fails to submit a diplomatic note, specifying its objections to the agreement, to all other Parties within 30 days after receipt of a notification pursuant to paragraph 4 of this Section. Withdrawal of all of its objections by a Party shall be regarded as its approval of that agreement.

8. Any diplomatic note submitted in accordance with subparagraph 7(b) of this Section shall include the express intention of the objecting Party to address its objection in the next session of the Commission. Failure of an objecting Party to attend such session shall be considered its withdrawal of its objection unless that objection is renewed by diplomatic note to all other Parties prior to the closing of that session.

9. If the text of an agreement, negotiated in the Commission in accordance with paragraph 3 of this Section, is amended in order to resolve any Party's objection or for any other reason, the amended agreement shall constitute a new agreement subject to the provisions of paragraphs 4, 5, 6, 7, and 8 of this Section.

## V

1. Matters raised and discussed in the Commission, as well as the results of discussions, and any agreements reached, may be recorded in documents which shall be done in English and Russian, both texts being equally authentic, and each Party shall be provided with a complete set of such documents.

2. The Commission shall conduct its proceedings in private and may not make its proceedings public without the express consent of all Commissioners. The texts of agreements adopted by the Parties may be made public, unless otherwise agreed.

3. The official languages of the Commission shall be English and Russian.

4. Each Party shall bear the expenses connected with its participation in the Commission.

## VI

1. These Regulations shall supercede the Regulations of the Standing Consultative Commission approved in accordance with the protocol of may 30, 1973. The provisions of the memorandum of Understanding of the United States of America and the Government of the Union of Soviet Socialist Republics Regarding the Establishment of the Standing Consultative Commission of December 21, 1972, shall apply to the extent that they are consistent with the provisions of these Regulations.

2. These Regulations shall enter into force simultaneously with entry into force of the memorandum of Understanding of September 26, 1997, Relating to the Treaty Between the United States of America and the Union of Soviet Socialist Republics on the Limitation of Anti-Ballistic Missile Systems of May 26, 1972. The Commission may revise, repeal, or replace these Regulations to the extent and in such manner as the Commission deems necessary.

DONE at New York City on September 26, 1997, in five copies, each in the English and Russian languages, both texts being equally authentic.

FOR THE UNITED STATES OF AMERICA:

Stanley Riveles

FOR THE REPUBLIC OF BELARUS:

S. Agurtsou

FOR THE REPUBLIC OF KAZAKHSTAN:

K. Zhanbatyrov

FOR THE RUSSIAN FEDERATION:

V. Koltunov

FOR THE UKRAINE:

O. Rybak



## APPENDIX D. SELECTED THREAT BALLISTIC MISSILE SYSTEMS AND PROGRAMS

Sources: Duncan Lennox, *Jane's Strategic Weapon Systems* (Alexandria, VA: Jane's Information Group, 1997); Department of Defense, Office of the Secretary of Defense, *Proliferation: Threat and Response* (Washington, D.C.: GPO, November 1997); and Ben Sheppard, "Too Close for Comfort: Ballistic Ambitions in South Asia" in *Jane's Intelligence Review* (Vol: 10, No. 1, January 1998); Ed Blanche, "Iran is Warned Again of Missile Counteraction" in *Jane's Defence Weekly* (Vol: 28, No. 18, 5 November 1997); Ed Blanche, "Russia is Assisting Iran's Missile Drive, Says USA" in *Jane's Defence Weekly* (Vol: 28, No. 13, 1 October 1997); Paul Beaver "Syria to Make Chemical Bomblets for 'Scud Cs' in *Jane's Defence Weekly* (Vol: 28, No. 9, 3 September 1997).

# SELECTED THREAT BALLISTIC MISSILE SYSTEMS AND PROGRAMS

Country	System	Type	Range (km)	Payload	Status/In-service
China	CSS-2 (DF-3A)	MRBM	2,800	single HE/1-3 mT	Operational/1969
	CSS-3 (DF-4)	IRBM	5,500+	single 2 mT	Operational/1978
	CSS-4 (DF-5)	ICBM	13,000	single 5 mT	Operational/1980
	CSS-N-3 (JL-1)	SLBM	1,700	single 250 mT	Operational/1983
	CSS-5 (DF-21)	MRBM	1,800	single nuclear 250 kT/HE	Operational/1987
	CSS-6 (DF-15/m-9)	SRBM	600	single HE/nuclear	Operational/1991
	CSS-7 (DF-11/M-11)	SRBM	300	single HE/nuclear	Operational/1992
	CSS-8 (M-7)	SRBM	150	single HE	Operational/1992
	M-18	SRBM	1,000	single HE	Development/1998
	DF-25	MRBM	1,700	single HE	Development/2000
	DF-31/JL-2	ICBM/SLBM	8,000	single nuclear	Development/2000
	DF-41	ICBM	7,440	single nuclear	Development/1998
India	Prithvi-150	SRBM	150	single HE/nuclear	Operational/1994
	Prithvi-250	SRBM	250	single HE/nuclear	Operational/1996
	Prithvi-350	SRBM	350	single HE/nuclear	Development/2000
	Agni	MRBM	2,500	single HE/nuclear/chemical	Development/2000
Iran	Mushak-120/Iran 130	SRBM	130	single HE	Operational/1990
	Scud-B variant	SRBM	300	single HE/chemical	Operational/1987
	Scud-C variant	SRBM	550	single HE	Operational/1993
	Iran 700	SRBM	700	single HE	Development/1998
	Nodong	SRBM	1,000	single HE/nuclear/chemical	Development/?
	Taepo Dong 1	MRBM	2,000	single HE/nuclear	Development/?
	Taepo Dong 2	ICBM	4,000-6,000	single HE/nuclear	Development/?
	Shihab 3 (SS-4 based)	MRBM	1,200-1,500	single HE/chemical/biological	Development/2000
	Shihab 4	MRBM	2,000	single HE/chemical/biological	Development/2000

# SELECTED THREAT BALLISTIC MISSILE SYSTEMS AND PROGRAMS

Country	System	Type	Range (km)	Payload	Status/In-service
Iraq	Ababil-100	SRBM	150	single HE/chemical/biological	Development/1998
	SAKR-200	SRBM	150	single HE/chemical/biological	Development?/1998
	Al Hussein	SRBM	650	single HE/chemical/biological	Operational?/1988
Libya	Scud-B(SS-1)	SRBM	300	single HE/chemical/biological	Operational/1986
	Al-Fatah	MRBM	950	single HE/chemical/biological	Development/?
North Korea	Scud-B variant	SRBM	300	single HE/chemical/nuclear	Operational/1986
	Scud-C variant	SRBM	550	single HE	Operational/1992
	Nodong-1	SRBM	1,000	single HE/chemical/nuclear	Operational/1994
	Nodong-2	MRBM	1,500	single HE/chemical/nuclear	Development/1998
	Taepo Dong-1	ICBM	2,000	single HE/nuclear	Development/2000
	Taepo Dong-2	ICBM	4,000-6,000	single HE/nuclear	Development/2002
Pakistan	Hatf-1/1A	SRBM	80-100	single HE/chemical	Operational/1992
	Hatf-2	SRBM	300	single HE/chemical/nuclear	Operational/1992
	Hatf-3	SRBM	800	single HE/chemical/nuclear	Tested/1998
	M-11 (CSS-7/DF-11)	SRBM	300	single HE/nuclear	Development/1998
	Ghauri/MK III	SRBM	600-800	single HE/chemical/nuclear	Development/2000

# SELECTED THREAT BALLISTIC MISSILE SYSTEMS AND PROGRAMS

Country	System	Type	Range (km)	Payload	Status/In-service
Russia	FROG-7	SRBM	70	single HE/chemical/nuclear	Operational/1965
	SS-1B Scud A	SRBM	180	single 50 kT	Operational/1955
	SS-1C Scud B	SRBM	300	single HE/chemical/nuclear	Operational/1965
	SS-1D Scud C	SRBM	550	single HE	Operational/n/k
	SS-1E Scud D	SRBM	300	single HE/chemical/nuclear	Operational/n/k
	SS-19 Stiletto	ICBM	10,000	Mod 3, 6 MIRV 500 kT	Operational/1975
	SS-21 Scarab A	SRBM	70	single HE/chemical/nuclear	Operational/1976
	SS-21 Scarab B	SRBM	120	single HE/chemical/nuclear	Operational/1986
	SS-25 Sickle	ICBM	10,500	single 550 kT	Operational/1985
	SS-X-26	SRBM	400	single HE	Development/1998
	SS-X-27 (Topol-M)	ICBM	10,500	single 550 kT	Development/1998
	SS-N-8 Sawfly	SLBM	7,800	Mod 1, single 1 mT	Operational/1971
	SS-N-18 Stingray	SLBM	6,500	Mod 1, 3 MIRV 200 kT	Operational/1977
	SS-N-20 Sturgeon	SLBM	8,300	10 MIRV 100 kT	Operational/1982
	SS-N-23 Skiff	SLBM	8,300	4 MIRV 100 kT	Operational/1986
Syria	Scud B	SRBM	300	single HE/chemical	Operational/1982
	Scud C	SRBM	550	single HE/chemical bomblets	Operational/1996
	M-9 (DF-15)	SRBM	600	single HE	Operational?/1998
	M-11 (DF-11)	SRBM	300	single HE	Operational/1996

**APPENDIX E. TOP BALLISTIC MISSILE DEFENSE  
PROGRAM CONTRACTORS 1997**

Rank	Parent Company	Amount (\$000s)	Market Share
1	TRW Inc.	247,715	17.76
2	Raytheon Co.	195,682	14.03
3	Coleman Research Corp.	74,621	5.35
4	Lockheed martin Corp.	67,141	4.81
5	Nichols Research Corp.	65,625	4.71
6	Colsa Corp.	64,734	4.64
7	Teledyne Inc.	59,732	4.28
8	General Motors Corp.	42,727	3.06
9	BDM Corp.	40,550	2.91
10	Science Applications Intl. Corp.	37,790	2.71
11	Gencorp Inc.	29,112	2.09
12	Adler & Stern (1968) Ltd.	23,518	1.69
13	Rockwell International Corp.	22,882	1.64
14	Boeing Co.	22,515	1.61
15	Ogden Corp.	20,859	1.5

Source: *Government Executive* Magazine Internet Homepage; "GovExec.Com: A Service of *Government Executive* magazine."

Internet source: <http://www.govexec.com/top200/topbal.htm>





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